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ABSTRACT

This revision and expansion of the 1966 edition of the student materials, ED 040 101, is comprised of a student workbook and text for Unit II. It is a careful study of the structure and performance of the United States Market system including the aspects of how market competition between buyers and sellers affects resource allocation, what is produced, how goods and services are produced, how they are distributed, and how much is produced in total. The major objective is to help students learn enough to permit understanding and evaluation of the performance of the system in satisfying the desires and aspirations of the American people. The unit incorporates the basic strategy of problem-solving through inquiry. The nine chapter text includes general discussions by the principal author; three readings are keyed to the chapters. The programmed student workbook contains twelve programs, criterion tests, and thirteen exercises. An extensive use of graphs is continued in the revision, but the unit test is not repeated. Unit I is described in SO 001 700. Other available related documents are: 1) the test editions of the Teacher's Materials for both Unit I and Unit II, ED 040 100; and, 2) the final report of the curriculum development project, ED 028 093. Addison Wesley Company will be publishing the future editions of the units. (SBE)

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ECON 12 TEXT
UNIT II

CHAPTER 8

INTRODUCTION TO UNIT II

I. Introduction

Basically, the U.S. is a market economy--an economy where most production is organized by private businesses which hire the people to work and sell products to other businesses or to the people and where the distribution of output occurs through voluntary exchange of goods and services for money by families, businesses, and government agencies. Since people organize private businesses in order to earn profit from their investment and since consumers are not compelled to buy what is produced, the businesses can only succeed if they produce what people are willing to buy. This, then, is a market economy, a system in which most economic decisions are made and most economic activity is coordinated through a network of markets, each of which brings together buyers and sellers of a particular good or service.

In this unit, you will study the structure and performance of the U.S. market system. You will study how market competition between buyers and sellers affects resource allocation--what is produced, how goods and services are produced, how they are distributed and how much is produced in total. Our major objective in this unit is to help you learn enough about the structure of the U.S. market system to permit you to understand and evaluate the performance of the system in satisfying the desires and aspirations of the American people.

II. The Structure of the American Economy

By the structure of our economy we mean the millions of economic organizations--businesses, government agencies, households, labor unions, trade associations, etc.--and the network of markets and other exchanges which hold them together. We will describe the structure by looking at the kinds of organizations which exist, how they are organized into markets, what they do, and how efficiently they perform. As a very general introduction the next few pages give a broad impression of U.S. market structure by describing the major industry sectors of the economy, the change in relative importance of these sectors over the past forty years, the importance of large and small enterprise, and the effects of market organization on income distribution.

Industry Sectors

This section describes the different industries which generate our Gross National Product. We will compare the relative size of each sector in 1967 with the relative size of the sector in 1929, the last year of prosperity before the Great Depression and one of the early years for which this type of data is available. These comparisons will give you a picture of the industrial composition of our market system and of how the structure of the economy has changed as the economy has developed through the years. The data will give you some insights into the path and causes of economic development in our country and, hopefully, this insight will deepen as you complete this unit.

In the statistics which follow, production is divided into three broad industry sectors:

goods - manufacturing, agriculture, mining and extraction industries
services - private and public services
construction - public and private industrial or commercial building and private dwellings

These broad sectors are further subdivided into ten major industry divisions:

agriculture, forestry, fisheries
mining
construction
manufacturing
transportation
communication and public utilities
wholesale and retail trade
finance, insurance and real estate
government and government services
foreign trade

Diagram No. 1 shows how GNP is generated when we divide up the economy into four major sectors: durable goods, non-durable goods, services, and construction. The major changes which are noticeable here are the rising importance of durable as opposed to non-durable goods, and the drop in construction. There is a slight increase in the relative importance of services.

Diagram No. 1

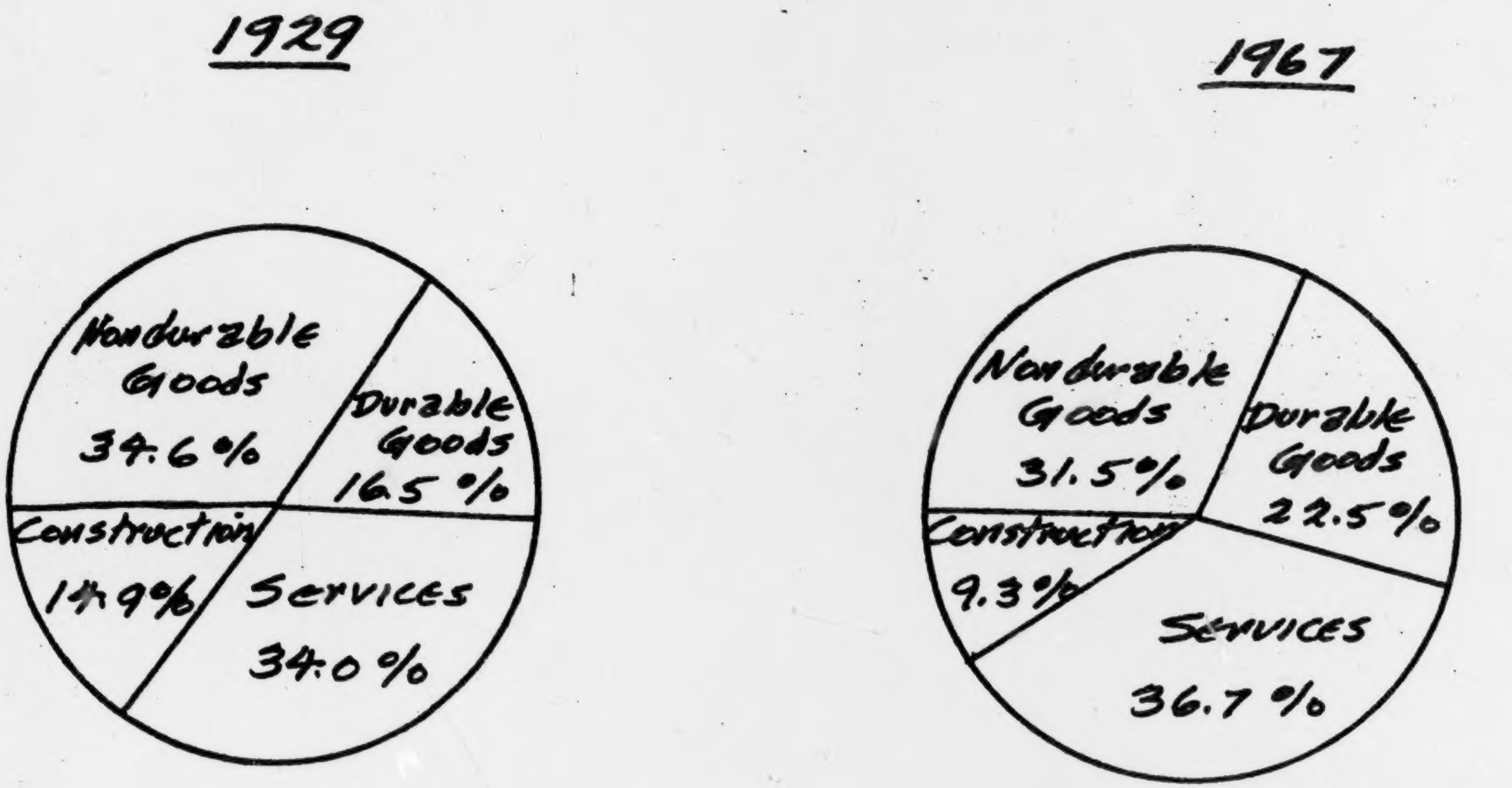
Percentage of U.S. Gross National Product Generated by Goods, Services, and Construction Sectors, 1929 and 1967. (GNP in Billions of dollars)

Source: Economic Report of the President, 1968, U.S. Govt. Printing Office, Washington D.C., 1968, p. 215.

	1929		1967	
	Bil.dollars	%of total		%
Total GNP	$203.6	100	$669.2	100
Nondurable Goods	70.4	34.6	211.0	31.5
Durable Goods	33.6	16.5	150.5	22.5
Services	69.3	34.0	245.6	36.7
Construction	30.3	14.9	62.1	9.3

Diagram No. 1

Percentage of U.S. Gross National Product Generated
by Goods, Services, and Construction Sectors,
1929 and 1967 (GNP in Billions of Dollars)



GNP = $203.6 Billions
(1958 dollars)

GNP = $669.2 Billions
(1958 dollars)

SOURCE: Economic Report of the President, 1968, U.S. Government Printing Office, Washington, D.C., 1968, p. 215.

Diagram No. 2 shows the relative importance of the various categories of expenditures in generating GNP. The most startling change is the rise in the relative importance of government, especially the rise of the military establishment. In 1929 federal civil and military spending was only 1.7 percent of GNP, and in 1967 military spending alone was 8.9 percent. The rise in the importance of civil government on all levels has been much less spectacular. Federal civil expenditures have probably not increased more than 1.25 percent of GNP, and state and local expenditures have increased .5 percent of GNP. Still, this small percentage increase has meant a doubling in the relative cost of federal civil government.

In all of these instances, the citizen has exchanged a relative decrease in the amount spent on private consumption in return for increased government services.

Diagram No.2

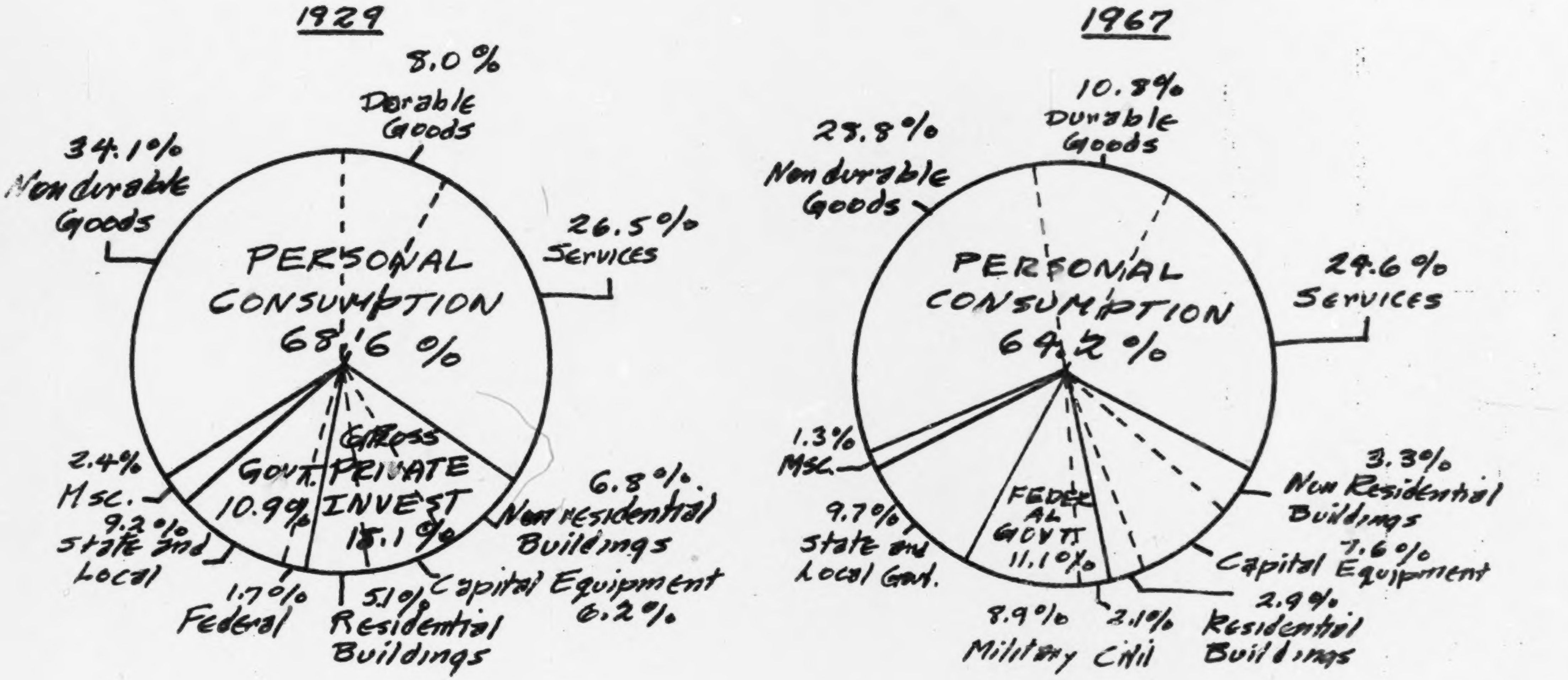
U.S. Gross National Product by Category
of Expenditure, 1929-1967

Source: Economic Report of the President, 1968, pp. 210-11

	1929		1967	
	Billions 1958$	% GNP	Billions 1958$	% GNP
Total	203.6	100.0	669.2	100.0
Personal Consumption	139.6	68.6	429.9	64.2
Non-durable goods	69.3	34.1	192.8	28.8
Durable goods	16.3	8.0	72.1	10.8
Services	54.0	26.5	164.9	24.6
Gross Private Investment	36.9	18.1	92.1	13.8
Non-Residential				
Buildings	13.9	6.8	21.8	3.3
Capital equipment	12.6	6.2	51.2	7.6
Residential Buildings	10.4	5.1	19.2	2.9
Government	22.0	10.9	138.6	20.7
Federal Government	3.5	1.7	74.0	11.1
Civil			14.2	2.1
Military			59.8	8.9
State & Local Gov.	18.5	9.2	64.6	9.7
Miscellaneous	5.0	2.4	8.5	1.3

Diagram No. 2

U.S. Gross National Product by Category of Expenditure, 1929-1967



GNP = $203.6 Billions
(1958 dollars)

GNP = $669.2 Billions
(1958 dollars)

SOURCE: Economic Report of the President, 1968, pp. 210-11.

Diagram No. 3 shows that general production patterns have remained fairly stable. This diagram shows how the major sectors generate GNP. The government sector is much smaller in this breakdown because it does not include any purchases of goods and services. It shows only the money paid to federal, state, and local military and civilian employees.

Except for non-farm business, which had a relative increase of only 4.3 percent, there have been significant shifts in the relative importance of the major economic sectors. There were decreases in farming (60.0 percent), households (36.0 percent), and foreign trade (14.0 percent). Each of these declines was offset by the 42.0 percent increase in the relative importance of government.

Diagram No. 3

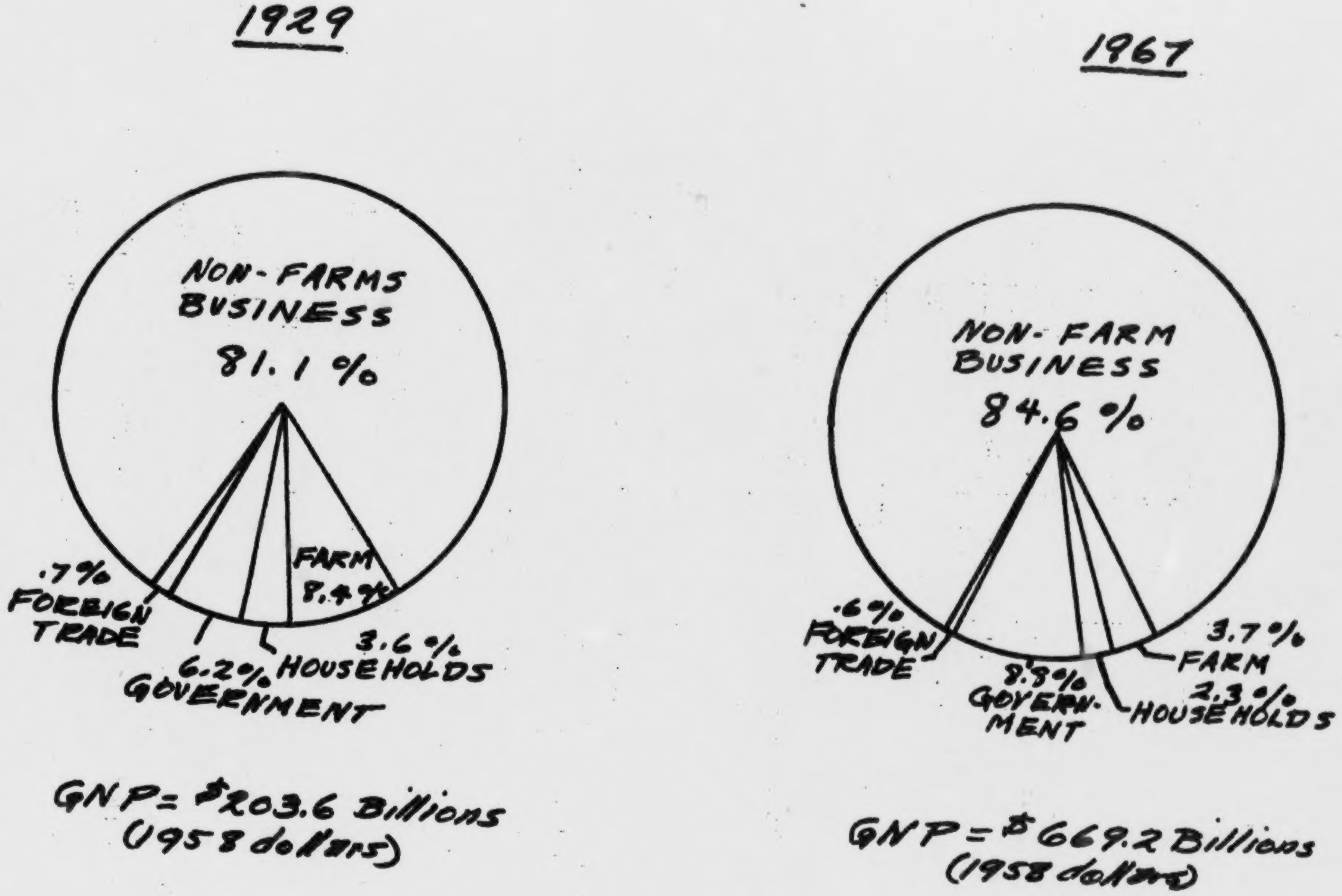
Percentage of U.S. Gross National Product Generated by Major Economic Sectors, 1929-1967.

Source: Economic Report of the President, 1968, p. 219.

	1929		1967	
	Billions 1958$	% GNP	Billions 1958$	% GNP
Total	203.6	100	669.2	100
Non-Farm Business	165.1	81.1	566.5	84.6
Farm	17.0	8.4	24.1	3.7
Households	7.4	3.6	15.3	2.3
Foreign Trade	1.4	.7	4.3	.6
Government	12.7	6.2	59.1	8.8

Diagram No. 3

Percentage of U.S. Gross National Product Generated by Major Economic Sectors, 1929-1967



SOURCE: Economic Report of the President, 1968, p. 219.

The data for the generation of GNP by major industries is only available for the period since 1947. Diagram No. 4 shows the shifts in the relative importance of major industries in the last 20 years. There has been considerable stability in industry patterns. Except for agriculture, which declined 38 percent, no industry changed as much as 15 percent and half of them changed less than 10 percent.

Diagram No. 4

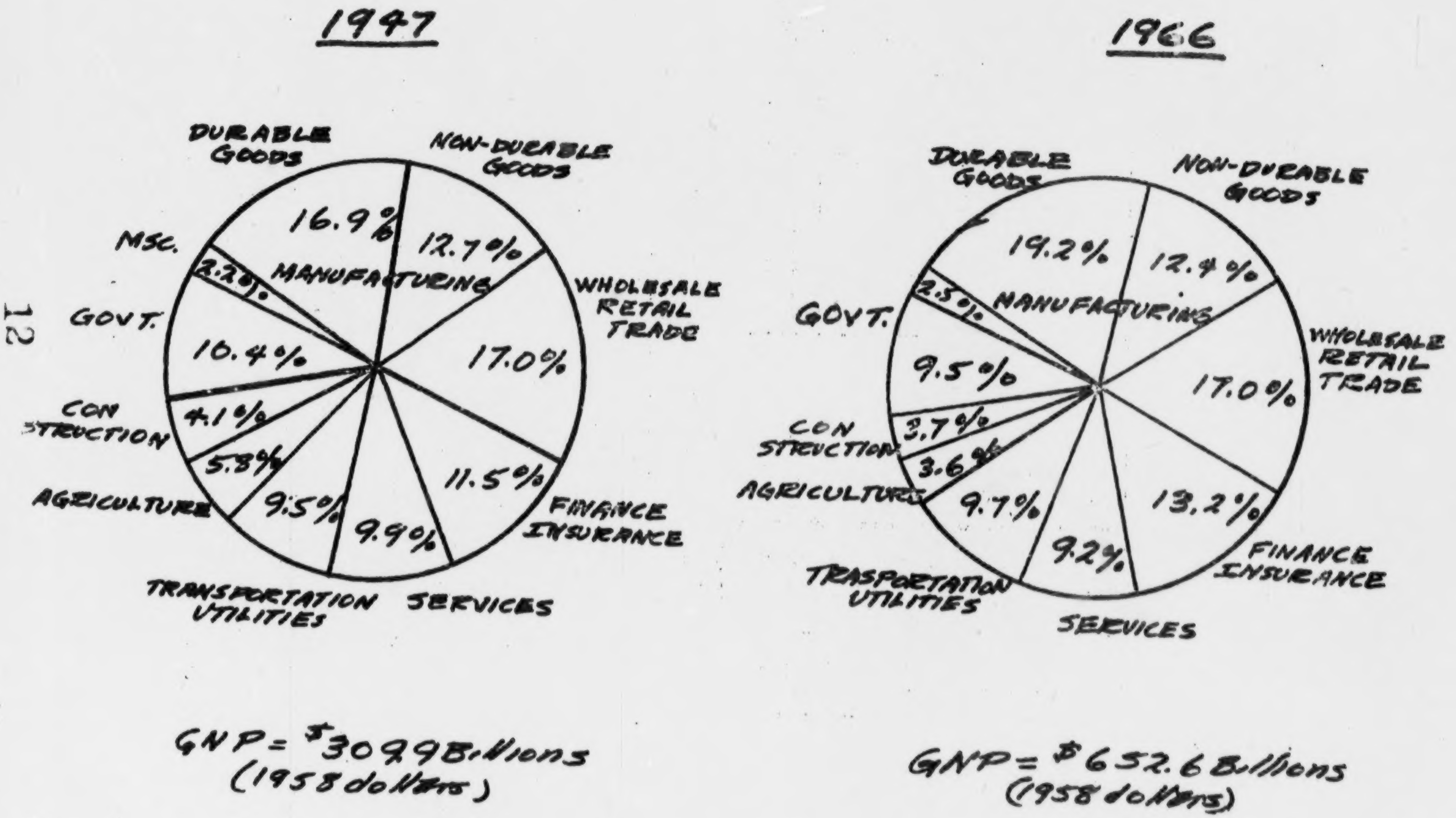
Percentage of U.S. Gross National Product Generated by Major Industries, 1947 and 1966.

Source: *Economic Report of the President*, 1968, p. 220.

	1947		1966	
	Billions 1958$	% GNP	Billions 1958$	% GNP
Total	309.9	100.0	652.6	100.0
Manufacturing	91.8	29.6	206.4	31.6
Durable goods	52.3	16.9	125.4	19.2
Non-durable goods	39.4	12.7	80.9	12.4
Wholesale & Retail Trade	52.7	17.0	111.0	17.0
Finance and Insurance	35.6	11.5	85.9	13.2
Services	30.6	9.9	59.6	9.2
Transportation, utilities	29.6	9.5	63.3	9.7
Agriculture	17.9	5.8	23.7	3.6
Construction	12.9	4.1	24.1	3.7
Government	32.4	10.4	62.2	9.5
All other	6.7	2.2	16.2	2.5

Diagram No. 4

Percentage of U.S. Gross National Product Generated
by Major Industries, 1947 and 1966



SOURCE: Economic Report of the President, 1968, p. 220.

Distribution of the Labor Force among Sectors of the Economy. The changes in the relative importance of the various industry sectors are also reflected in the distribution of the labor force. The next two diagrams show how the labor force has been distributed among industry sectors, and industry divisions. Diagram 5 shows that the most dramatic change in labor force distribution since 1929 has been the decline in agricultural employment. The movement has been from the farm, and from self-employment, into wage and salaried employment in business, civil service, and the armed services.

Diagram No. 5

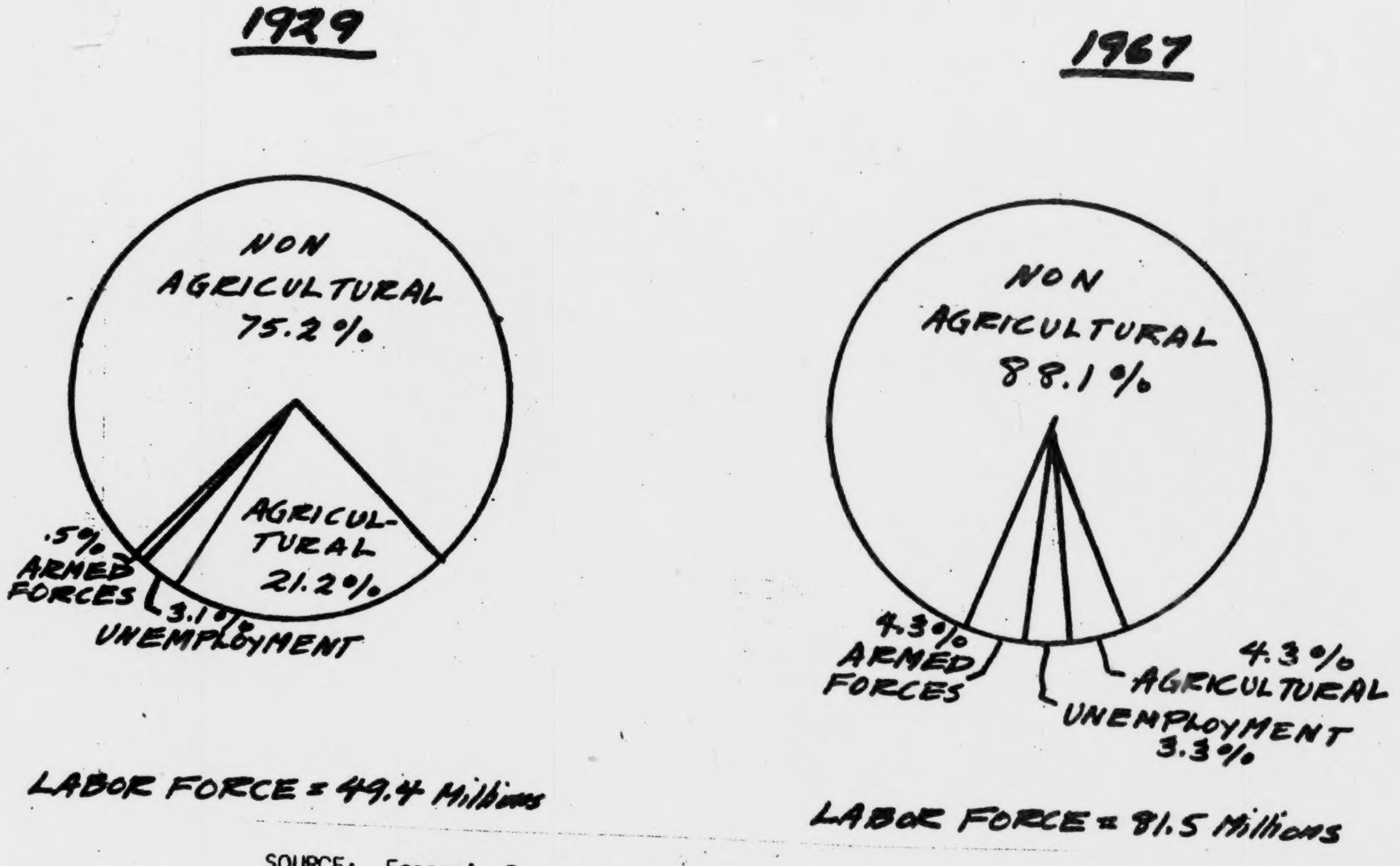
Percentage Distribution of the U.S. Labor Force by Sectors, 1929-1967

	Millions 1929	%	Millions 1967	%
Total	49.4	100	81.5	100
Civilian				
Non-Ag.	37.2	75.2	71.8	88.1
Agricul.	10.5	21.2	3.5	4.3
Unemp.	1.6	3.1	2.7	3.3
Armed Forces	.3	.5	3.5	4.3

Source: Economic Report of the President, 1968, pp. 234-5.

Diagram No. 5

Percentage Distribution of the U.S.
Labor Force by Sectors, 1929-1967



SOURCE: Economic Report of the President, 1968, pp. 234-5.

The changing distribution of wage and salaried employment in business and civil service is given in Diagram 6. This diagram shows the distribution of manpower among non-agricultural sectors. The largest changes in distribution among these industry divisions have been the drop in transportation and utilities employment and the increase in government employment. Manufacturing and mining and construction declined somewhat, while employment in services and (commerce rose.)

Diagram No. 6

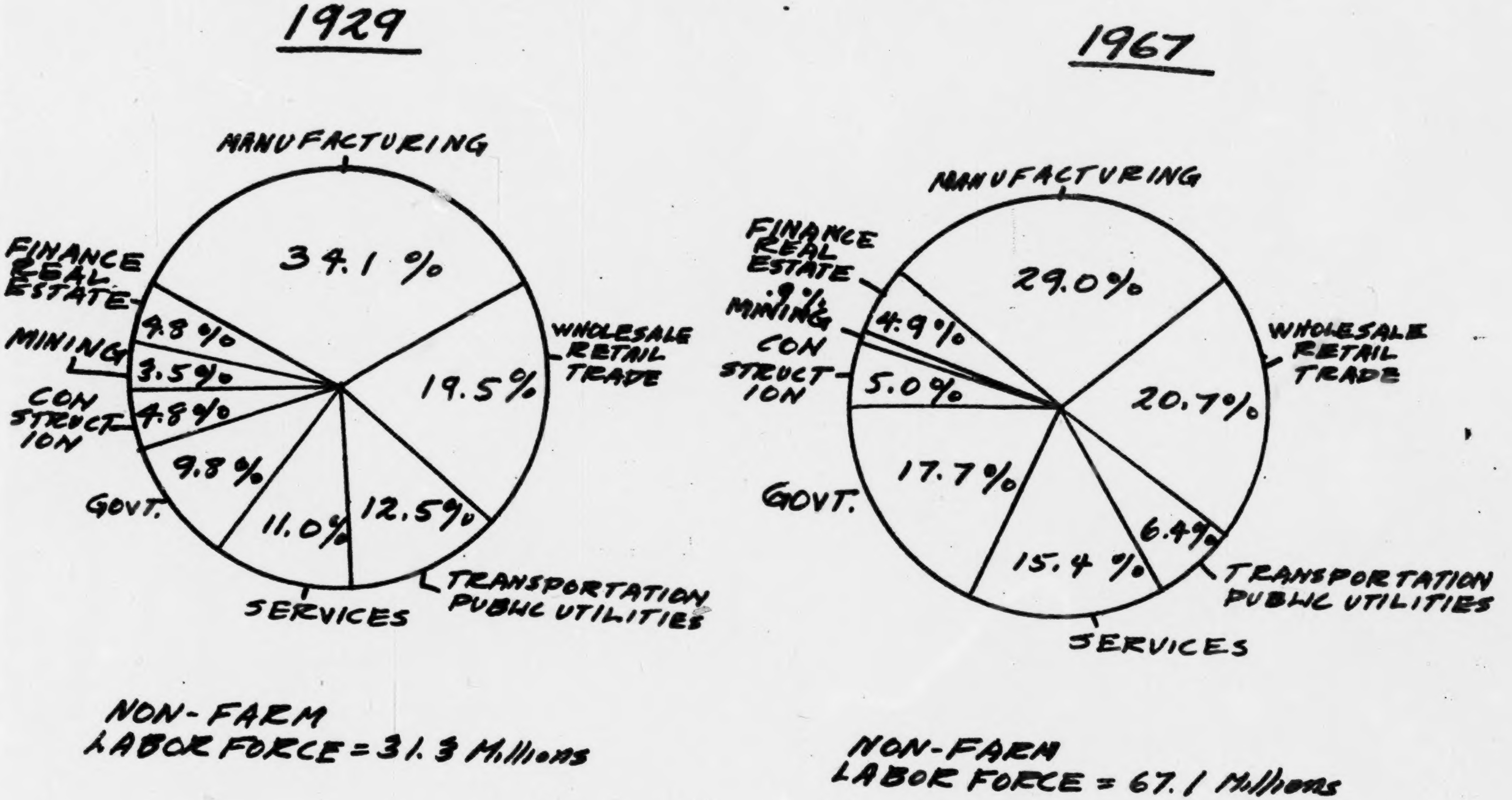
Percentage Distribution of the U.S. Non-Farm Labor Force Among Industry Divisions, 1929-1967.

Source: The Economic Report of the President, 1968, pp. 240-41.

	Millions 1929	%	Millions 1967	%
Total	31.3	100	67.1	
Mfg.	10.7	34.1	19.5	29.0
Wholesale & Retail Trade	6.1	19.5	13.9	20.7
Transportation and pub. utilities	3.9	12.5	4.3	6.4
Services	3.4	11.0	10.3	15.4
Government	3.1	9.8	11.9	17.7
Construction	1.5	4.8	3.4	5.0
Mining	1.1	3.5	.6	.9
Finance and Real Estate	1.5	4.8	3.3	4.9

Diagram No. 6

Percentage Distribution of the U.S. Non-Farm Labor Force among Industry Divisions, 1929-1967



SOURCE: Economic Report of the President, 1968, pp. 240-41.

To summarize, we can say that the trends away from agricultural production, the relative stability in manufacturing production as a proportion of GNP, the rising importance of service industries describe the continuing development of the U.S. into a balanced, industrialized, and generally affluent economy. Less developed economies would show a much larger percentage of GNP produced in the agriculture or extractive sectors of the economy, and a much smaller percentage of GNP generated in the manufacturing and service industries. The growth in the government sector of our economy indicates the effect of war and fear of war, and to a lesser extent, an increasing demand for public services, primarily financed through state and local taxation.

Corporations and the Economy

The foregoing diagrams show the relative importance of the various sectors of our economy and the divisions within the sectors, but they give no indication of how production in these sectors and divisions is organized. Here, the most significant characteristic is the importance of technology to increase productivity. Although most American businesses are small, the economy is dominated by enormous concentrations of power in the federal and state governments, in the large corporations, and in the large labor unions. There are about 12,000,000 business firms in the United States, but 500,000 of the largest of them (corporations) do 75 percent of all the business in the country. Of these 500,000 corporations, the top 500 produce almost half of all the goods and services we consume each year; the top 50 of these corporate giants produce almost one-fourth of all goods and services; and the top 10 of them produce more than one-eighth of all goods and services. When to these 500 giant industrial corporations we add the 50 largest corporations in banking, life insurance, merchandising, transportation, and public utilities, the total 750 corporations produce more than the economy of any country other than the United States.

If we exclude the 100 largest banking and life insurance corporations, the remaining 650 largest non-financial corporations are the power base of organized labor. Approximately 30 percent of the 70 million non-agricultural workers are organized. Of the 20 million or so union members, over one-third of them are among the 16 million employees of the 650 largest non-financial corporations. These unions include such giants as the 1.5 million member United Autoworkers, and the Steelworkers, Machinists, and Electricworkers, each with nearly a million members.

Because of these power concentrations, some economists describe our economy in terms of the relationships which exist between the large corporations, the large unions, and the federal government. These economists assert that these three dominant elements in our economy--large corporations, unions, and government--do not compete through market exchanges, but instead they make bargaining agreements among themselves, or they unilaterally decide, about products, supply, and prices. If this is true, it means that such decisions are relatively free from market competition, that consumer demand does not determine supply of output or prices of the products of these large corporations, except in the long-run. The complex technology of modern industry is the major reason cited for this breakdown of the market mechanism. Highly complicated products requiring years for research, development, and production cannot be produced without careful planning and reasonable certainty as to factor supply and prices, and probable consumer demand and prices. An uncontrolled market cannot offer such reasonable certainty and thus non-market agreements are made which insure the rational basis of industry upon which long-term planning depends.

Despite the presence of huge corporations, government agencies, and unions, there are many industries which are highly competitive; they are composed of a large number of small businesses competing with each other to supply buyers. These are the eleven and a half million firms which produce 25 percent of the nation's output. In fact, even the 500,000 largest firms include mainly relatively small firms. Professor Richard Caves of Harvard estimates that perhaps half of American manufacturing output is produced in fairly competitive industries, half is produced in industries dominated by a small number of businesses which supply most of the buyers in that market. In other sectors of the economy it is harder to estimate the importance of large businesses. These non-manufacturing sectors show considerable variety in the amount of competition, but markets with few sellers are common in these sectors as well.[1]

Household Sectors and the Distribution of Income

Our economy is more than the industries which employ people and generate the goods and services which these same people consume. The purpose of production and distribution is to satisfy human wants. To describe the structure of our economy we must describe how the benefits of efficient production are distributed among the families which make up our society.

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[1] Richard Caves, American Industry: Structure, Conduct, and Performance. Prentice Hall, Englewood Cliffs, New Jersey, 1964. pp. 11-15.

Table I below shows the percentage of all families in the United States in 1965 which earned an income within the income class described in column I. Column 3 shows the percentage of all families which earned an income in this class plus all lower classes. The median income in 1965 of $6,882 means that half of the families earned an income less than $6,882 and half of the families earned more than $6,882.

Table I

The Distribution of Family Income by Family Units, 1965*

Income Class	Percentage of All Families in this Class	Percentage of All Families in this Class and Lower Classes
Under $3,000	16%	16%
$3,000 to $4,999	16	32
$5,000 to $6,999	19	51
$7,000 to $9,999	24	75
$10,000 to $14,999	17	92
$15,000 and over	8	8
TOTAL	100%	100%
Median Income	$6,882	

*The census definition of family excludes single persons not living in families.

SOURCE: Bureau of the Census, Current Population Reports, Series P-60, No. 51, January 12, 1967, pp. 1 and 2.

The table shows that in 1965 seventeen percent of U.S. families earned less than $3,000, an income which is low enough to consider the families in poverty. Seventy-five percent of the families earned less than $10,000. Although this might seem like a handsome income by some standards, by our own standards it is not. Recently the U.S. Department of Labor published a budget estimating the cost of maintaining a city family at an average and acceptable standard of living. In 1966, the budget estimate for a family of four for the whole country was $9,200.[1]

Although these statistics are susceptible to different types of interpretations, it should be clear that income and, therefore the benefits from our efficient economy, are unevenly distributed among the families living here. Later, chapters 16 and 17 describe in greater detail U.S. income distribution, the trends in income distribution since the beginning of the century, and the extent of poverty. Here it is only necessary to point out that poverty occurs more often among some groups than others. For instance, in 1965, the median income for white families was $7,170 while the median income for non-white families was $3,971.[2] In that year, eighty-nine percent of families headed by a woman earned a family income less than $5,000 per year while only forty percent of families headed by a man earned less than $5,000 per year.[3]

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[1] A description of this budget and its components is given in a reading for Unit II, Lesson 10. See page 158 for more details on the City Worker's Family Budget.

[2] U.S. Department of Commerce, Bureau of the Census, Current Population Report, Series P-61, No. 49, August 10, 1966, p. 2.

[3] U.S. Department of Commerce, Bureau of the Census, Current Population Report, Series P-60, No. 51, January 12, 1967, p. 32.

To understand the structure of our economy it is necessary to understand the way income is distributed and the factors which cause the unequal distribution of income. We will study these problems in chapters 16 and 17.

III. Evaluating the Performance of Our Economy

The structure of our economy, private and public, small business and mammoth corporation, rich families and poor, mirrors the social values of our society. These are the organizations which perform the basic economic activities and which, thereby, permit us to achieve or strive to achieve our economic goals. The extent of economic progress, stability, freedom, justice, and security in our society--the general gains and the extent to which these gains are shared by the total population--depend on the operation of our economic institutions. For example, take the values of economic freedom and security as they were described in Unit I. Freedom was defined as the freedom to engage in any economic activity--production, consumption, saving and investment. Security was defined as the assurance of steady work or a steady flow of purchasing power to citizens to permit them to live above some acceptable minimum standard of living.

Part of economic freedom in a market economy is the freedom of individuals to own property and to buy and sell that property. This power of property owners to control buildings, land, productive capital gives them freedom of choice, but it also permits them to restrict the economic freedom of others. For example, people who do not own a factory or a house cannot acquire such property unless they can buy it, and property owners can refuse to sell to certain people. One demand of the fight by Negro civil rights groups has been to break down discrimination in renting and selling of residential houses through the passage and enforcement of laws restricting property owners' freedom to sell or rent to persons of their own choice. These laws, if enacted and enforced, will redistribute economic freedom--they will reduce the freedom of white property holders by increasing the choices of minority groups.

Another similar example is the fight to end discrimination in business hiring practices against racial minorities, women, and older people. Here again, the property owner, or his agent, can exercise his freedom of choice in deciding who to hire for a particular job. But his exercise of freedom interferes with the job applicant's right for a just share of the nation's output. As laws are passed making it illegal for employers to discriminate against women, Negroes, persons over forty years or under twenty years old, hiring practices change, and economic justice for one group is won at the expense of freedom of choice of property owners.

Thus, what we mean by economic freedom is directly related to who exercises freedom and is reflected in how business, government, unions, and households operate. The civil rights and black power movements are altering radically our racial attitudes and these changes will be reflected in changes in the economic structure of the society--the percentage of income, jobs, and property controlled by Negroes.

Likewise, the extent to which people value security and have taken steps to make people economically secure have affected the structure of our economy. Since the Great Depression of the 1930's, the federal government has developed monetary and fiscal policies which have prevented serious depressions for the past 25 years. The federal and state governments have also established a series of programs--unemployment insurance, social security, medicare, etc.--which increase the financial security of many Americans. However, almost ten million families, or close to twenty percent of the total number, are still living in poverty and these are the families whose members experience the greatest unemployment and fear economic insecurity. The U.S. economy has created both the prosperity for the majority and the poverty and insecurity for this large minority. It has also influenced our ideas as to what we mean by economic security, that is, what a family needs in the way of economic benefits in order to be secure.

To eliminate poverty we must find out what there is about the structure of our market economy and our social system which creates poverty, then formulate and carry out policies which will alter current practices and conditions so that the causes of poverty can be eliminated.

We hope that this unit will give you the knowledge and skills you need to study the ways businesses compete to create goods and services as well as jobs and the economics of race and poverty, then to relate this understanding of the structure of the economy to goals of our society. By the end of the unit you should be able to read and discuss some of the major points of view about the performance of our economic system and to arrive at your own conclusions about the rate and direction of economic development in the U.S. On a more personal level, we hope that your new insights into the way our market system operates--its achievements and shortcomings--will help you understand how you fit into the system and choose what actions you can take to be effective in achieving your own goals.

For this purpose this unit takes up the following topics in this order:

The Characteristics of a Market Economy (Chapter 9)
Price Determination in a Competitive Market (Chapter 10)
The Law of Supply and Demand (Chapter 11)
Perfect Competition and Perfect Monopoly (Chapter 12)
The Organization of Imperfectly Competitive Markets (Chapter 13)
Control and Regulation of Competition and Monopoly (Chapter 14)
Income Distribution in the U.S. (Chapter 15)
Poverty in the U.S. (Chapter 16)

UNIT II

CHAPTER 9

THE CHARACTERISTICS OF A MARKET ECONOMY

I. Introduction

Our economy is characterized as a market system because it is through market exchanges that we make allocation decisions--what to produce, how to produce this output, for whom to produce it and how much to produce in total. To say that economic decisions are made through market exchange means that when individuals buy and sell goods and services, each transaction requires the buyer and the seller to make a choice. Taken together, all of these decisions determine how economic resources are allocated.

One way to get some initial insight into this process of resource allocation through market bargaining is to start with your own experience. How do you decide what to buy and to sell, and how do your decisions affect resource allocation? When you buy as a consumer you have to know what things are available and how the alternatives compare in price and quality. For example, the automobile tire market has prices and qualities ranging from $6.99 retreads to $75 premiums, and the ladies' shoe market has everything from Karl's brand at $5.99 to Bally's at $45.

Once you know the prices and qualities of the things you want, you have to decide how to spend your money. Because you probably want more things than you have money for, you must decide which of the many things available you will buy. You have to compare these things with each other in terms of how much satisfaction they will give you per dollar spent. You probably recognize this process of comparing as the calculation of alternative costs. In choosing between items, you are part of a market and, because sellers react to consumer buying, your decision to buy helps determine what businesses will produce.

If you sell something, you also need to know the price and the quality of items which compete with what you are selling. You probably have had less experience selling than buying, but perhaps you've already tried to sell your labor. In looking for a job, you want to know the wages or salary currently paid for each possible opportunity. This information puts you in a position to sell your own labor at the best price you can get. Again, in this instance, you are making a decision which allocates an economic resource (your own labor) and, therefore, you are sharing in making the what, how, and for whom decisions.

We defined a system in Unit I as an orderly arrangement of parts into a whole to perform some function. The U.S. economy is a market system because it is made up of many different markets which, taken together as a whole network of markets, allocates resources and distributes output to the people. The purpose of this chapter is to orient you to studying our market system by describing some important features of a market economy: (1) the essential role of private property and freedom to buy and sell; (2) the control which markets exert on individuals in the economy; (3) the importance of laws in regulating markets and protecting property rights; (4) a simple way to look at the mechanics of market resource allocation.

II. The Essential Characteristics of A Market Economy

To say that an economy is a market economy means that most economic activity is coordinated through money exchanges between people who are more or less free to buy or sell whatever they wish. Two structural characteristics must be present in a market exchange economy. First, production must be specialized, so that there are different producers of different goods and so that output must be distributed to final consumers. Second, productive resources and the output of production must be privately owned and the owners must be free to exchange their property. In a market economy, specialized production is organized and controlled by privately owned businesses which hire people to work for wages or salaries. People earn an income by selling their labor or other productive services to businesses which produce output and sell it to other businesses or to final consumers. Thus, for the system to work, both businesses and members of the labor force must be free to exchange goods or services for money and they must have some incentive to do so.

Basic to a market system is the existence and protection of private property rights and the right to enter into contracts to buy or lease property. Individuals must have the right to possess private property and to dispose of it by lease or sale. That is, people must be able to buy and sell land or capital goods (all factors of production except labor), as well as consumer goods and services. People must own assets in order to be able to sell them. This right also gives property owners control over the use of their property.

A necessary part of the freedom to own property or to control one's labor is the right to enter into a contract to sell or buy, borrow or lend private property or to buy or sell labor services. People involved in an exchange of assets (a house for money, for instance) can state the conditions of the sale or lease of property in a contractual agreement which can be enforced by the courts. Then if one person refuses to fulfill his contractual obligations, the other person can go to court to force him to live up to the provisions. Likewise, employees and employers can enter into contractual agreement about the conditions of employment.

Finally, in a market system people tend to value economic success. The system creates the opportunity and, therefore, the desire to better oneself by earning higher incomes and by acquiring more wealth. The system creates monetary incentives. One can increase one's status by becoming rich; and the ability to enjoy the output of society depends on the ability to buy. Thus, the driving force which motivates people to better themselves and to be more productive is the desire to earn a stable and rising income or to amass wealth through acquiring more and more property.

To summarize, a market system is characterized by the following: the ability to own property and to enter into contracts over the use or disposal of private property; specialized production organized by private business; the ability and necessity for most people to work for money wages or a salary; and people's general desire to improve their economic welfare by increasing their income or wealth. In such a society economic decisions about what, how, for whom are made by individual firms or people acting in their own economic self-interest. Individuals act directly to allocate resources through their own individual decisions to buy or sell. This decentralized decision making is a major characteristic of a market economy.

In societies where private property is not an established or important institution, market exchange is not the important mechanism for allocating resources. In Unit I the readings on the American Indian tribes described people who lived in self-sufficient tribes or clans, where exchange existed but was a relatively unimportant part of distributing output and, in the case of the Tsimshian, where property was owned by the clan and could not be sold. In Unit IV you will study underdeveloped economies in India, Nigeria and Brazil, where many of the people live in self-sufficient villages, cut off from most markets and where people are too poor to own property other than their own personal effects. The Unit IV study of Russia will illustrate how a government uses central planning to allocate resources in a country where all capital is socialized.

III. The Market System's Control Over Individuals

One of the advantages of a market system is that individuals can decide for themselves what contribution they will make to production and what they will consume. Although this may seem to give people a great deal of economic freedom, nevertheless the system controls people by forcing them to work in order to earn the money so that they can buy the things which will satisfy their wants. Furthermore, people must choose an occupation and as a result of the bargaining which takes place, the 15,000 or so trades and professions in our economy are staffed.

Under the market system this matching of people to jobs occurs because employers offer jobs to qualified applicants. If there are too many applicants for a job, the less qualified applicants must seek work elsewhere. If there are too few applicants, the employer must attract them from other jobs. The price which the employer is willing to pay the employee for his labor is the power which distributes the labor force. If there are too many applicants for a job, the employer hires only the best qualified or hires those willing to work for lower wages. Either way, some workers leave that occupation. If there are too few applicants, the employer can attract workers by raising wages.

Finally, the economy controls individual actions by limiting consumer demands to what one can afford to buy. In so doing, the market allocates the goods and services produced to those who have purchasing power. It forces everyone to choose between alternative goods and services to conserve their income. But, in addition, for those with low earning power, the market system limits their participation in both production and consumption. A market system distributes output according to the income earned by people or according to a person's wealth.

IV. Legal Protection of Property Rights and of the Right to Work

In a market system people's economic rights to own property, to work for wages or a salary or to enter into market exchanges must be protected by law or custom. But these laws also have the effect of regulating economic activities, thereby restricting one group's rights to protect another's. Most disagreements over government economic policy can be traced to disagreements over whose rights the laws should protect.

It is often claimed that government laws guarantee individuals complete freedom to own property and to buy and sell labor services and assets is the best guarantee of efficient allocation of scarce resources. For example, if a qualified worker is barred from a job because of his color, and has to take a job which is below his skill level, our labor services are not being used efficiently. The same is true if an employer, because of laws or union rules, cannot fire an inefficient employee and hire an efficient one in his place. Inefficiencies also arise if an individual does not have the right to use, and to buy and sell his property in the most profitable way, or if he cannot do so because the law does not protect him by enforcing contracts.

These are all examples of the way restrictions on the exchange of labor services and assets interfere with efficient resource allocation. Though this generalization is often true, (government restrictions reduce efficiency) just as often government laws restrict people's rights to buy and sell in order to increase efficiency. When we examine these kinds of restrictions, it becomes obvious that unfettered economic freedom does not necessarily further the efficient allocation of scarce resources.

For example, child labor might benefit certain employers and parents and, without laws against it, we would still have child labor today. However, restrictions on child labor increase economic efficiency by keeping children in school where their work skills are increased. Here one sees the difference between long-run and short-run calculations of efficiency. In the short-run, a child's labor adds to total production but, with no time for education, his skills will increase only slowly. By contrast, the educated child enters productive life with highly developed skills. The contrast can be made very clear by calculating the lifetime earnings of an unskilled worker from age 7 to 65, and contrasting them with the lifetime earnings of an engineer, or doctor, from age 30 to 65.

The law places restrictions on property when the state condemns a man's land in order to build a freeway, or forces a factory to install costly smog control or waste water treatment devices. In each instance, the restrictions help the market system to operate more efficiently than would be the case without the restriction.

We can conclude that a market system requires that (1) people work for wages and salaries, (2) individuals or privately owned corporations can own assets,

(3) workers and property holders can enter into contracts about the use of their labor or assets. Without these, you can't have markets. However, the government must protect these rights. The previous paragraphs point out how custom or laws restrict one's freedom to work, to own property or to enter into contracts. One object of economic or political analysis is to explore whether or not these restrictions promote or detract from efficiency or other goals. The market system functions to support the goals and values of those with market or political power. The system works under an elaborate and complex set of laws and regulations. If these laws are to promote an effective market system in a rapidly changing society, then they must change to reflect the changing needs and goals of the society.

V. Why the Market System Works

One of the most fascinating things about our market system is the fact that it works. How can the countless number of individual buying and selling decisions be coordinated so that producers supply what people want? Why can you go to an auto parts store and expect to find a tail light for a 1948 Ford, or Chevrolet, but not for a 1948 Dodge or Pontiac? Why can you go to a shoe store and expect to find this year's fashions in 9 1/2 AAA in five different colors but not last year's fashions in 6 A in basic blue? At any one time, the market system makes millions of different resources, goods, and services available. At the same time, of course, millions of other things people want are not available.

The exchanges in our market system determine what is and is not available because suppliers respond to the demands of buyers and because buyers respond to what suppliers make available. If enough people want something and are willing to pay a price high enough so that a supplier can make a profit, that item will be available. Enough people want 1948 Ford and Chevrolet tail lights to make it profitable to produce them. The same is not true for 1948 Dodge or Pontiac tail lights.

A supplier will also produce an item if he believes that he can induce enough people to buy it at a price which will make a profit. No one wanted an electric can opener until someone produced it and put on an advertising campaign which induced people to buy it. Suppliers created the demand for many of the hard goods we buy today--garbage disposals, color television, rotisseries, etc.

Whether the demand is created by the consumer or the supplier, an item will only be produced if the supplier can make a profit. If he cannot, the item will not be available. Ultimately, the supplier knows whether the consumer wants something by the quantity people are willing to buy and the price they are willing to pay. Prices are a kind of shorthand. They convey most of the information a buyer needs to decide how much to buy. The housewife knows how much satisfaction chuck roast or orange juice will give her family and the price permits her to calculate the alternative cost of buying one thing or another. Similarly, for sellers, the price gives information about consumer demand. Given the price, the producer of toasters can decide whether or not it is profitable to increase his output or to continue to make toasters.The price tells the buyer what the seller is willing to take for the item, and it tells the seller what the buyer is willing to pay.

The Market System as a Cybernetic System

We still have not described how the market decisions of millions of people result in the efficient allocation of resources, but the clue to the mystery was suggested in the following passage written almost two hundred years ago in The Wealth of Nations, by Adam Smith.

> ". . .every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting. . .by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was not part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good."

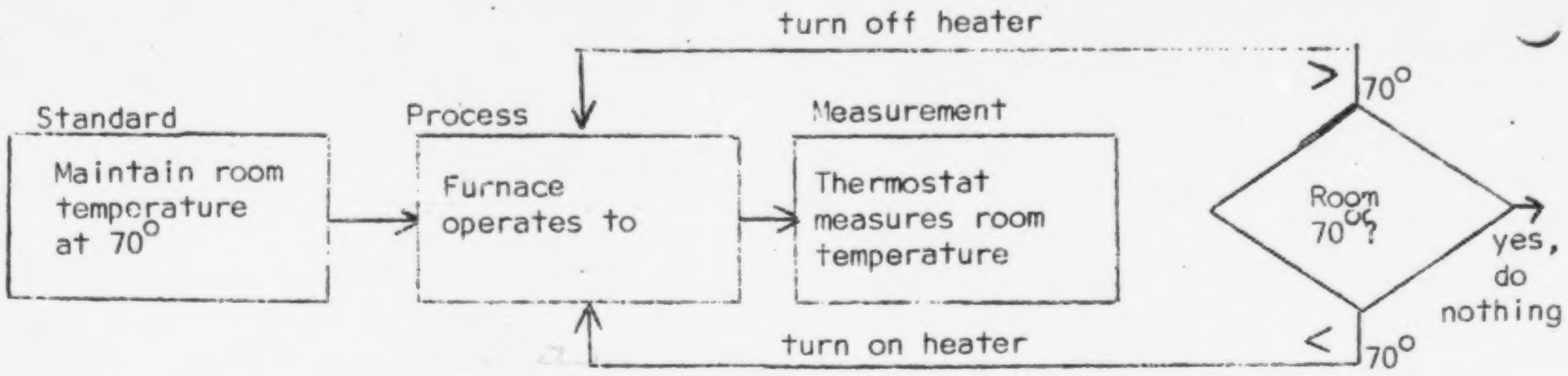
If each of us would buy as cheaply as possible and sell at the highest price we could get, we would maximize our income. The magic of the process lies in the fact that in miximizing our incomes, we strive to use our own economic resources efficiently, and, in so doing, cause all economic resources to be used efficiently. In short, by working to maximize our own incomes, we promote an end which no part of us intended--the most efficient allocation of economic resources.

When all economic resources are used with the greatest efficiency, total production is maximized. By maximizing total production we create the possibility of improving the economic welfare of everyone in society. Note that in maximizing total production, the invisible hand does not insure that each person's economic well being will be increased.

In modern jargon, Adam Smith was describing the economy as a cybernetic (sigh-ber-NET-ick) system. A cybernetic system is one which is automatically self regulating. In the process of carrying out its function, the system generates information which the system uses to keep itself operating correctly. For example, a thermostatically controlled heating system is a cybernetic system which controls the heating of the house to insure that the house maintains a constant temperature. The guidance system in a missile is a cybernetic system which controls the missile's flight path.

Each of us is a cybernetic system, and our bodies contain numerous cybernetic systems. Our body temperature maintenance system (very similar to that of a house) is a good example. The brain maintains a constant temperature of 98.6° (thermostat). The body has nerves which sense change in temperature (thermometer) and send this information to the brain. If the signal indicates the temperature is above 98.6°, the brain orders cooling processes to function; if below 98.6°, the brain orders heating processes to begin. As soon as the body is the right temperature, the nerves, which sense heat, stop sending signals, and the body is momentarily in a condition of temperature equilibrium.

Any cybernetic system has four basic features. First, it performs a function according to some standard of performance. If the room thermostat is set to keep the room at 70°, then the heating system is set to maintain that standard, a 70° temperature in the room. Second, the system goes through some process to satisfy this standard. In the case of the house heating system, the furnace heats the house. Third, there is a measurement device which generates information which it uses to measure the operation of the system. The thermostat measures the heat of the room. Finally, there is a feedback mechanism by which the measurement information is fed back to regulate the process. In the heater example, when the temperature falls below a selected level, the heater turns on. When the temperature is restored to the selected level, the heater turns off. We can illustrate this system by use of a flow diagram:


turn off heater
Standard
Maintain room temperature at 70°
Process
Furnace operates to
Measurement
Thermostat measures room temperature
> 70°
Room 70°?
yes, do nothing
< 70°
turn on heater

The market system operates like a cybernetic system composed of numerous cybernetic subsystems (particular markets) which control resource allocation. At any given time, people want certain goods and services, and because businesses operate to make the most possible profit, the system operates to produce what people want. In fact, each business firm can be considered a cybernetic system in business to maximize profits. The standard of performance used by the business is a certain rate of profit. The process is production and sales,, the measurement is the accounting procedures used to determine profits. If profits are higher than the standard, the firm will continue production and will probably increase output; if profits are lower than the standard, the firm will reduce production and if they fall below some minimum standard for a certain period of time, the firm will either sell out or go into some other line of production.

Likewise, buyers operate as a cybernetic system. Their purpose is to maximize satisfaction with a given amount of income. The process they engage in is buying; the process of consumption creates satisfaction which the consumer measures against the cost of the things consumed. If prices change, consumers change their buying decisions to try to get more satisfaction.

When buyers and sellers are all acting according to some standard of performance to maximize their gain from some exchange, then the market is itself a cybernetic system. The competition of buyers and sellers in a market causes the price of the product to fluctuate to bring about a balance between the amount supplied and the amount demanded. If prices rise because of an increase in demand, then more is produced. If prices fall because of a drop in demand, then less is produced. Thus, the changes in prices cause suppliers to change the amount they produce and this means a reallocation of resources to conform to consumer demand.

To repeat, because it is important, the whole market system is considered a cybernated system in which the information is conveyed by the prices which are placed on resources, goods, and services. Every individual in the system receives information in the form of price, and sends out orders in the form of decisions to buy and to sell. The changes in prices resulting from these orders to buy and sell produce new information in the form of new prices, and thus the system has a constant feedback of information. In the process of responding to prices by buying or not buying goods and services, the consumer conveys information to the producer who then changes his production or his prices and sends this new information to the consumer who responds anew. The process is circular and continual. The economy is a social organization that receives and generates information in the form of prices and responds to this information by producing those goods and services that satisfy the wants of the people making up the society.

Production and consumption are organized in response to market decisions. For example, if 10,000 male consumers want a new suit and are willing to pay $75, then Mr. X who owns a clothing factory will make suits in this price range if he can do so profitably. He will calculate how much he can pay for the capital, raw material, and labor needed to make the suits.

Mr. X will then respond to the price of money he must borrow (interest), to the price of the labor he must hire (wages), and to the price of machines he must buy (cost of capital), and to the prices of the raw materials which go into the suits. If he can purchase all the factors of production and still make the suits for less than $75, he will make them and in so doing respond to a consumer want which was conveyed to him by the price of suits. The people Mr. X must borrow money from to buy his capital equipment, the people who will sell him raw materials, and the people who will work for him, all respond to the prices Mr. X offers. Each link in the want satisfaction chain is made by the market system. Wants are made known by the consumer's willingness to buy something at a particular price. The inputs of land, labor, and capital are decided on according to price. Outputs are priced to sell, and people buy in response to price. Thus, the what, how, how much, and for whom decisions are made on the basis of the price of all inputs of land, labor and capital, and the outputs of goods and services.

Assessing the Effectiveness of the Market System

Adam Smith was optimistic about the ability of the invisible hand of the market to automatically allocate resources to maximize economic efficiency and to satisfy consumer demand. His optimism was based on his analysis of highly competitive markets. In the next chapter you will see that when there are many, many small producers competing to sell their output to many small buyers, market bargaining has the effects Smith predicted. This is because sellers must conform to consumer demand or go ou[illegible]ness. In addition, they must constantly try to increase profits by finding more efficient production methods or more satisfying products. But producers cannot make large profits for long, because these high profits will attract competitors who will increase the market supply, thereby forcing down prices and profits. The result of this competition is that producers try their hardest to be efficient and to innovate, but when they do they attract new competitors whose competition forces profits down again. It's a cybernetic system--an aggravating world for producers, but a great one for consumers.

Obviously, producers don't like such competitive conditions and their natural tendency is to try to reduce competition. Some lucky producers can protect their profit position by staying one step ahead of the pack--always being the first so that they constantly earn high profits. Competitors sometimes can escape competition by forming into alliances with competitors or by buying out competitors. We will see a few chapters hence that for many mass production industries today, it is impossible for there to be many producers because the most efficient level of operation is so large that a relatively small number of producers can supply the whole market.

The big question is, what happens to market allocation when the supply side or the demand side of the market is dominated by one or a small number of suppliers. For instance, suppliers can restrict supply and thus keep the price up. In addition, they may not have to innovate to keep alive, or they can spend money on advertising to mold consumer demand. How accurately does the competitive model describe our economy? How many markets in the U.S. are dominated by big suppliers or buyers? How does this kind of market power affect resource allocation? These are the questions we will study in this unit.

The next two chapters go into greater detail to describe Adam Smith's competitive markets as well as monopoly markets. Then the remaining chapters and readings in this unit describe actual competitive conditions and provide case studies to permit you to compare the model markets with real market competition.

CHAPTER 10

PRICE DETERMINATION IN A COMPETITIVE MARKET

The next three chapters elaborate on the generalizations just made by describing in more detail the cynernetic operation of markets. We will prove that perfect competition brings about perfect use of scarce resources to satisfy existing consumer demand (what people with money want to buy). We will do this by constructing and analyzing a model of a perfectly competitive market. The model will permit us to explain and predict how prices and quantity sold are determined in a competitive market and how changing demand and supply conditions make prices change which turn force producers to make decisions about what, how and how much to produce. We will then show that perfect monopoly also operates like a cybernetic system, but that in this case the system automatically allocates resources to maximize the monopolist's profits rather than to maximize consumer satisfaction.

The models developed in these chapters are not physical objects--like a model city, or a model airplane whose operation can be tested in a wind tunnel. Rather, they are made out of words (which we will convert into a diagram). More accurately, the first model is made up of a careful definition of the meaning of a "perfectly competitive" market. This definition states the attributes of the market--assumptions about what a perfect market is and rules about how market participants behave. We will use this precise definition of a perfectly competitive market to predict how competition between buyers and sellers will set price and amount sold and what happens to make prices change. Likewise, the perfect monopoly model consists of a definition of the conditions of perfect monopoly. The models are useful because we can figure out logically how competition works in these two "perfect" cases. This will permit us to draw conclusions about the effect of competition and of lack of competition on resource allocation. Even more important, working with the model markets gives insights and a method of analysis which is extremely useful for studying the conduct and performance of real markets later in this unit.

A word of caution. What we will be doing is fairly easy to follow as long as you go along with the rules of model building. The analysis is a ddmonstration, a proof of how competition works under perfect conditions. For you to be able to follow the reasoning, it is essential to use the definitions of market, supply, demand, etc. which we introduce. All conclusions are drawn from these definitions. If you know them, you should have no trouble following the reasoning. If you don't, you won't understand why we say that certain things are true. It's like playing any game. In football, for instance, there are rules of the game and functions which different players are supposed to serve. You can only understand the plays if you know the rules.

I. Market Defined

Most people, if asked what a market is, would say that it is a place where things are bought and sold. If asked to name some markets, they might think of a supermarket, a produce market or the stock market. Such answers are not incorrect because the word has been used to mean market place for centuries. In the history of our own western culture, the market and the church have always been the two main centers of social life. In the middle ages, each town had its market square where farmers, tradesmen and merchants set up stalls and sold their wares. If you were to visit the old cities and towns of Europe of South America, you would see the central position of the markets, and very often you might still see them filled with farmers and tradesmen, as they have been for centuries.

For purposes of the model we develop in this chapter, and in general in economics, a MARKET is defined as the total number of buyers and sellers of a particular good or service who, by their competition, determine the price and quantity sold of the good or service. There are two important parts of this definition. First, a market is made up of people--all the buyers and sellers of a particular good or service. Second, by all the buyers and sellers we mean all those who compete to sell or buy and by this competition affect the price or the amount exchanged.

Equating a market with a market place, while accurate in earlier times, is inaccurate today because there is seldom a centralized place of exchange where all of the buyers and sellers of a commodity gather to make transactions. Today, in the U.S., there is no market place for most important markets; however, we can classify markets according to the geographic extent of the market.

The geographic boundaries of the market depend on the nature of the product and the location of the people who compete in buying and selling it. For some goods there is a local market, for some there is a national market, for some an international market.

Typical markets in our own economy which seem to have a location are the stock market, the commodity markets, wholesale garment markets and retail markets for the commodities we consume in our households. At first glance one might think that the New York Stock Exchange, where corporate stocks are traded, has a definite geographical location. This, however, is not the case, for, even though all of the transactions are made on the "floor" of the Exchange, the actual buyers and sellers are spread all over the world.

The same is true of commodity markets where the staple farm products and the major industrial raw materials are traded. Buyers and sellers of wheat, cotton, corn and coffee and of hemp, rubber, copper, cobalt and castor oil might be anywhere in the world. Examples of local markets are markets for such things as fresh food and for personal services; but even in these examples it is difficult to determine precise geographic boundaries, because the price of the product is affected to some extent by buyers and sellers of the product in other local markets for the product. In order to understand how buyers and sellers in competition establish prices and quantities sold, we need to examine both supply and demand separately.

II. Market Demand

We are about to develop a model of a market which we can use to predict the effect of market competition between buyers and sellers--how this competition determines the price and quantity sold. We will start by dividing the market into a demand side and a supply side of the market. In the model, market demand has a special meaning and the definition must be abided by when used in describing the model market.

Market Demand, A Definition

The demand side of a market is made up of all of the people who want to buy a commodity at some price. MARKET DEMAND for the commodity is the relationship between the price of the commodity and the amount which buyers will buy on a certain day. It summarizes buyer's willingness to buy at different prices.

Be careful with this definition. Market demand is not one number representing the amount bought on a particular day (5000 bushels of wheat at $2.50 per bushel). It is a relationship between the possible prices of the commodity and the amount people would buy at each price (if the price is $1.50 per bushel, buyers would buy 10,000 bushels, if the price is $3.00, they would buy 4000 bushels, etc.). The existence of this relationship between price and quantity demanded means that people will want to buy different amounts at different prices. The quantity demanded by buyers depends on the price--generally, the higher the price, the less people will be willing to buy.

Another caution. Demand is not the same as desire. If people will not pay or cannot pay to buy the item, they are not part of the market. Their desire cannot be reflected in the price-quantity demand relationship, because at any price, the amount they will buy is zero. Thus, market demand means effective demand--the amount people will pay for at each price. The old English saying, "If wishes were horses, beggars would ride" reflects this reality of the market because, in a market world, people cannot demand something unless they can pay for it.

Market Demand Schedule. Market demand for a product can be described by a table called a MARKET DEMAND SCHEDULE, which lists the prices and, next to each price, the quantity which people will buy at that price. Table I gives a hypothetical market demand schedule for skateboards in the days (a few years back) when skateboarding was a national fad. By the way, in this case, we will assume that there is a national skateboard market--that is, all of the producers in the country compete with each other. This is realistic, because it is relatively easy to make skateboards and because transportation costs are low. Thus local furniture or carpentry businesses could be making and distributing skateboards locally along with manufacturers who sell throughout the country.

Table I
Market Demand for
Skateboards in the
U.S.A., August 10, 1968

Price	Quantity Demanded per week (in 1000's)
$ 6.00	420
8.00	380
10.00	340
12.00	300
14.00	260
16.00	220
18.00	180
20.00	140
22.00	100
24.00	60

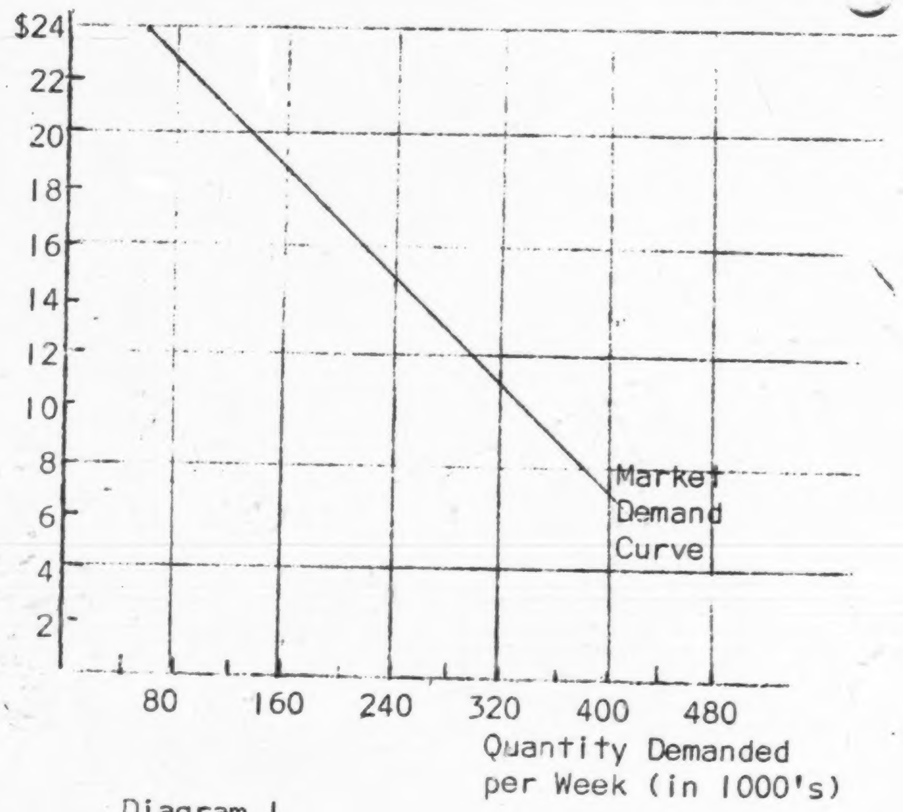


Diagram I

Market Demand for Skateboards
August 10, 1965

The table shows consumer preferences for skateboards on August 10, 1968, throughout the whole U.S.A. Consumers will buy $420,000 skateboards per week if the price is $6.00. They will buy only 60,000 per week if the price is as high as $24.00; they will buy 180,000 boards per week if the price is $18.00. The table does not tell how much will be bought, because we don't know the price, but it describes how, on that day, quantity demanded is related to price. It is a model of the demand side of the market, because, if we know the price, we could predict how much would be sold.

Market Demand Curve. The graph to the right of the demand schedule shows the data from the table plotted on an arithmetic line graph. This DEMAND CURVE is another way of representing the price-quanity relationship which describes market demand.[1] Note that both the schedule and the curve give the same information. If you read the row in the table where price is listed as $10.00, you will note that people will buy 340,000 skateboards at that price. Likewise, point "a" on the demand curve shows how much people will buy when the price is $10.00-340,000 skateboards per week. Thus the market demand price-quantity relationship can be shown as either a demand schedule (table) or a demand curve.

Notice that in the line graph, price is measured on the vertical axis and that quantity demanded is measured on the horizontal axis. This is always the case; we will always use the horizontal axis for quantity, the vertical axis for price. A demand curve is constructed from a demand schedule by plotting a point for each related price and quantity (for each row in the demand schedule). The distance from the vertical axis axis over to the curve equals the quantity (for point "a" on the curve, this is 340,000). The distance from the horizontal axis up to the curve represents the price (for point "a" this is $10.00). By connecting the points for each price and quantity pair, we get the demand curve. (For more information about line graphs--how they are constructed, how to read them, etc., see Program 4 in the Unit II workbook.).

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[1] The demand line graph is called a "curve" whether it is straight, curved, a series of angles. This is just a convention of mathematicians which we don't want to violate.

Later on in this chapter you will see that representing demand as a curve will be especially useful in deriving a market model, but even now you should see that the curve gives at a glance important information about the nature of the price-quantity relationship. It shows, for instance, that as price gets higher, quantity demanded gets smaller. There is a negative relationship between price and quantity demanded.

The Negative Influence of Price on Quantity Demanded

For most goods and services quantity demanded is negatively related to price. That is, people tend to buy less of a commodity if the price increases. Your own experience should tell you that this is so. Otherwise, merchants would not have sales or lower prices to entice customers into their store and away from competitors. For instance, butchers know that some housewives who will not pay $1.35 per pound for sirloin steak, will buy when steak is on a "special" for $1.00 per pound.

This negative relation between the amount people will buy of a product and it's price can be explained by two facts of life: (1) people have a limited amount of money to spend and they must make choices about what to buy; and (2) as a person consumes larger and larger amounts of the same thing (candy, movies, cars) consuming additional amounts gives less and less additional satisfaction. People are forced to budget their purchasing power to get the most satisfaction they can from their purchasing power and in this budgeting process they juggle two attitudes about consumption. On the one hand, the tenth steak consumed during a week gives less satisfaction than the first steak. On the other hand, there are many more things, in addition to steak, which a person wants to buy that he cannot afford. Under these circumstances, prices of commodities are important. If we are using alot of steak (or bread) we will not buy more unless the price drops, because there are other things which will give more satisfaction per dollar spent. If steaks are too expensive for someone to buy, when the price falls, they may be able to afford to buy steak instead of hamburger.

The Substitution Effect of Price Changes. Price changes affect consumer choices about how much of a thing to buy, because people substitute one thing for another as prices change. Because we can almost always find substitutes for a commodity if its price goes too high, the quantity demanded will be inversely related to its price. With every rise in the price of a commodity, some people will buy less of the commodity and will satisfy their wants with substitute commodities. With every fall in the price of a commodity, some people will be willing to purchase more of the commodity and use it as a substitute for something which they have been consuming.

The existence of many commodities which can be substituted for one another requires us to choose what we will consume. The need to choose makes us sensitive to prices. When the price of a good falls, we tend to buy less of substitute commodities, and when the price rises, we buy more of cheaper substitutes. For instance, when gasoline prices drop, commuters might use their cars more and the trains less. When the price of butter increaes, people tend tc buy less butter and more margarine than they did before. The prices of commodities allow us to calculate their real cost in terms of substitute commodities and thus to make our decisions as to what we will purchase.

Price Responsiveness of Quantity Demanded

Generally speaking, the more substitutes there are for a commodity, the more sensitive buyers are to price changes. For instance, because one vegetable is a substitute for another, the quantity demanded of any one type changes alot when price changes. The out-of-season price of asparagus is usually high so that few people buy fresh asparagus except in season when the price is low. On the other hand, when an important rock band gives a concert, not only is the concert sold out, but people are willing to pay almost any price to attend.

The market demand schedule or curve for a product permits us to measure how responsive quantity demanded is to price changes. In Diagram 2 two hypothetical demand curves are drawn together on the same graph, the market demand for beer and for milk. Which commodity would you say shows quantity demanded as more sensitive to price changes?

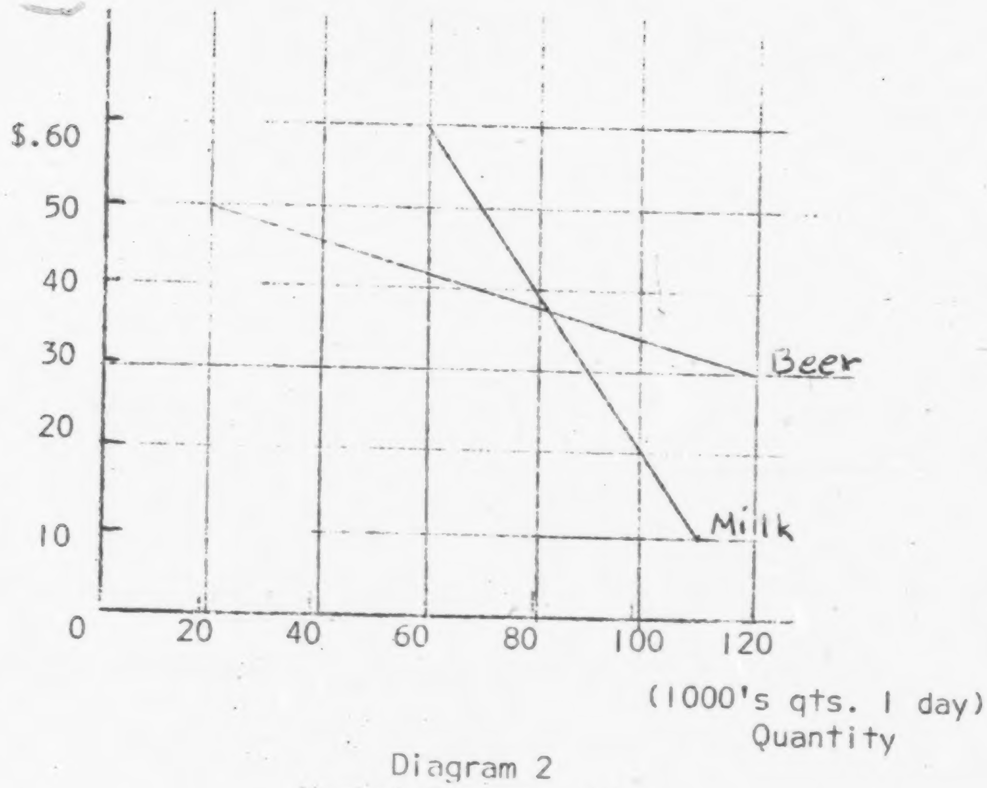

Diagram 2
Market Demand: Milk
And Beer

You should be able to see at a glance, from the steepness of the two curves, that quantity demanded of beer is more responsive to the price of beer than is the quantity demanded of milk. The beer market demand curve is shallower. Beer prices renge from 30¢ to 50¢ and beer demanded ranges from 20,000 to 120,000 quarts per day. On the other hand, milk prices range from 10¢ to 60¢, but milk demanded ranges from only 60,000 to 110,000 quarts per day.[1]

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[1] The slope measures the ratio of the change in the variable measured on the vertical axis to the change in the variable measured on the horizontal axis. The slope is this ratio expressing the rate of change. Thus, the rate of change in beer prices per unit change in quantity of beer demanded is:

$$\frac{50 - 30}{20,000 - 120,000} = \frac{20}{-100,000} = -\frac{1}{5000} = -.0002$$

The rate of change in milk prices per unit change in quantity demanded is:

$$\frac{60 - 10}{60,000 - 110,000} = \frac{50}{-50,000} = -\frac{1}{1000} = -.001$$

The slope, or rate of change in the price of beer per unit change in quantity demanded is smaller than the slope for milk. Under certain circumstances, such as those here, you can compare the demand curve shapes to compare price responsiveness of quanity demanded. (This starts getting you into graphic analysis. If you feel uncomfortable about the graphs and the ideas of slope, see Program 4 on Line Graphs, Unit II Workbook.)

Elasticity of Demand. Economists measure price responsiveness of quantity demanded by measuring the ELASTICITY of market demand. The elasticity of demand for a product is the ratio of the percentage change in quantity bought to the percentage change in price.

$$\text{Elasticity of demand} = \frac{\%\ \text{change in quantity demanded}}{\%\ \text{change in price}}$$

For instance, assume that the price of pop records increases by 10% and the quantity of records sold drops by 5%. Then the elasticity of demand for pop records is $\frac{-5\%}{10\%}$ or -.5.

When the quantity demanded of a commodity is highly sensitive to price changes we say that the good has an ELASTIC DEMAND. For instance, the demand for sports cars is usually elastic--highly price responsive. Few such cars will be bought, but a small percentage change in price will bring about a relatively large percentage change in quantity sold. Let's say a 5% drop in the price of a Masserati increases quantity sold.by 40%. The elasticity of deman is $\frac{40}{-5\%} = -4$. Demand is elastic whenever the ratio is greater than 1, that is, whenever a certain percentage change in price brings about a larger percentage change in quantity demanded (in the opposite direction, of course.)

On the other hand, when quantity demanded does not respond much to a price change, demand is INELASTIC. If the price of milk drops, people will not increase the amount bought by as large a percentage and if the price increases, people will not reduce milk purchases by very much. Demand for milk is inelastic; the elasticity of demand ratio will be less than one. Let's say that a 5% price drop in milk brings about a 1% increase in quantity of milk demanded. The elasticity of demand for milk is

1%/5% or -.2. We can make the following generalization about price responsiveness--elasticity--of demand.

ELASTIC DEMAND	$\frac{\text{\% CHANGE IN QUANTITY DEMANDED}}{\text{\% CHANGE IN PRICE}}$	PRICE RESPONSIVE
INELASTIC DEMAND	$\frac{\text{\% CHANGE IN QUANTITY DEMANDED}}{\text{\% CHANGE IN PRICE}}$	UNRESPONSIVE TO PRICE CHANGES

Predicting Demand Elasticity. Why is the demand for sports cars elastic and the demand for milk inelastic? Is it possible to predict whether or not demand is elastic and why would you want to?

It is quite easy to predict accurately how responsive consumers are to price changes of a particular good, and you will see that it is very useful information for a businessman trying to operate successfully in a market. The explanation has to do with substitutes and money.

Normally, you can predict the elasticity of demand for any commodity in its usual price range by answering the following questions:

1. Is the good or service a physical or social necessity of life?
2. Are there close substitutes available?
3. Do most buyers have to pay what they consider a lot for the commodity?

Generally speaking, commodities have an inelastic demand if they are either necessities, or if they cost a small proportion of what buyers have to spend, or if they have no close substitutes. By contrast, commodities have an elastic demand if they are luxuries, cost a large proportion of what buyers have to spend, have close substitutes.

What gets classified as elastic or inelastic varies between societies and often within societies, mainly because of differences in the income level of the people. In most societies, basic shelter, fuel and basic food and clothing items have an elastic demand. However, in the United States automobiles and some electric appliances have inelastic demand because they have become necessities, while in most of the world the demand for these things is elastic.

Elasticity of Demand for a Product at Different Prices. For almost any commodity, demand is elastic at relatively high prices and inelastic at relatively low prices. Medicines offer very good examples of such commodities. They are a good example because often a new drug is initially high priced, and the price falls for various reasons. Penicillin had this development. The drug for high blood pressure, reserpine, was so expensive when it first appeared that most people who suffered from high blood pressure could not afford it. The drug was a luxury with an inelastic demand, for the quantity sold increased rapidly as the price fell. At present the price is low enough so that almost everyone who needs the drug can afford it. Any further fall in the price would lead to only a small increase in quantity demanded; the demand is inelastic at low prices.

There are also examples of a change in the elasticity of demand for a product. This often occurs when good substitues for a commodity become available. For instance, before the invention of the sewing machine, handmade shoes were a necessity and large changes in price had little effect on demand. Now they are a luxury with an elastic demand because cheaper shoes are available for purchase.

Summary

The demand side of a market is made up of all the buyers of the good or service. Market demand for a commodity is a price-quantity relationship, stating the amount of the commodity which will be bought at each possible price on a given market day. Market demand for a good or service can be described by a market demand schedule or a demand curve which is a model of the demand side of the market on a particular day.

The relation between price and quantity demanded is negative. That is, people tend to buy more of most goods or services at lower prices. The demand for some goods and services is more sensitive (responsive) to price than for other products. If demand is sensitive to a change in price, demand is elastic; if it is insensitive, demand is inelastic. Elasticity of demand of a good or service depends on three things: 1) the need for the good; 2) the number of substitutes for it; 3) the cost of it as a percent of what people have to spend.

Although goods and services can be classified according to whether or not demand is elastic or inelastic, it is also true, that for almost any good or service, demand will be elastic if the price is high enough, and demand will be inelastic at very low prices.

III. Supply

Market Supply: A Definition

Just as a market demand schedule shows the amount of a commodity which will be demanded at each price, so the MARKET SUPPLY SCHEDULE shows the quantity of a commodity which will be supplied at each price. Buyers tend to buy more of a commodity at lower prices, but sellers are usually willing to sell more only at higher prices. MARKET SUPPLY is a price-quantity relationship describing the total amount which all sellers will supply at each price.

Market Supply Schedules and Curves. The supply schedule and curve are two ways of constructing a model of the supply side of a market. Again, we will use imaginary data for the skateboard market in August, 1965 to illustrate market supply. Table 2 shows the supply schedule for Ace Skateboards, one of 500 manufacturers in the market; this table shows the number of skateboards which Ace Skateboards will produce per day, given the supply conditions existing in the industry in August, 1965. The actual amount the company will sell depends on price; and the higher the price, the more skateboards the company is willing to produce and sell.

The same information is shown as a supply curve in Figure 3. Supply curves are drawn similarly to demand curves in that the vertical axis is used to measure price, and the horizontal axis measures quantity supplied.

Table 2
Supply Schedule for
Ace Skateboards,
August 10, 1965

Price per Skateboard	Quantity Supplied per day
$ 6.00	290
8.00	400
10.00	500
12.00	600
14.00	675
16.00	732
18.00	780
20.00	820
22.00	850

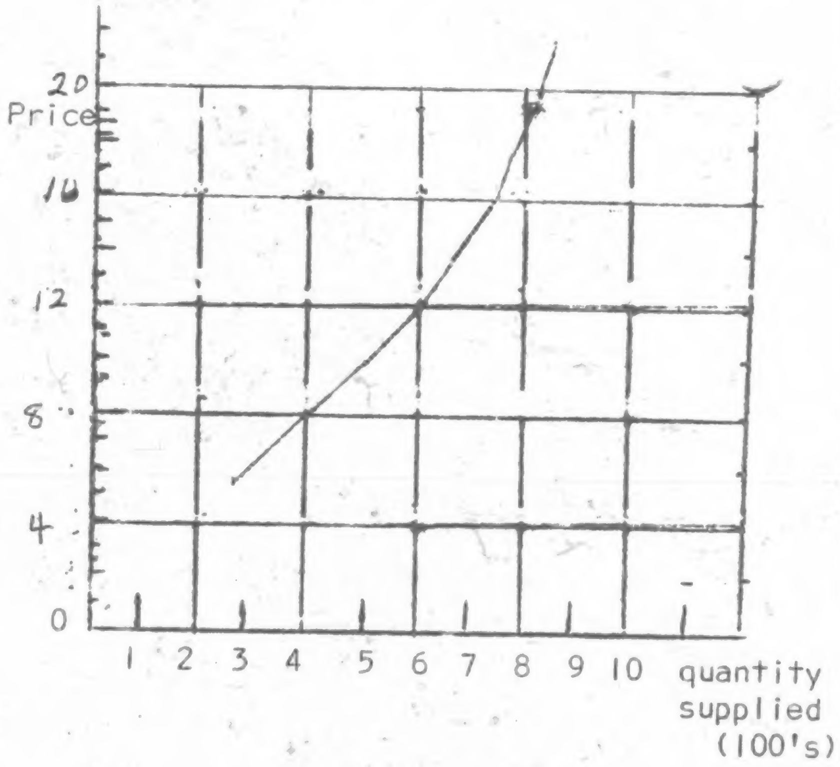


Figure 3
Supply Curve for Ace Skateboards, Unlimited for August, 1965

Since we are making up the example anyway, let's assume that there are 500 skateboard manufacturers, each producing 1/500 of the skateboard output, and each producing exactly the same kind of skateboard. Each firm is just like Ace Skateboards, Unlimited. Table 3 and Figure 4 show the market-supply schedule and curve for skateboards on August 10, 1965. At each price, quantity supplied by the total market is 500 times the amount supplied by Ace Skateboards.

Table 3
Market Supply Schedule for
Skateboards, August, 1956

Price per Skateboard	Quantity Supplied per Day (500 x Ace Supply)
$ 6.00	145,000
8.00	200,000
10.00	250,000
12.00	300,000
14.00	337,000
16.00	366,000
18.00	390,000
20.00	410,000
22.00	425,000

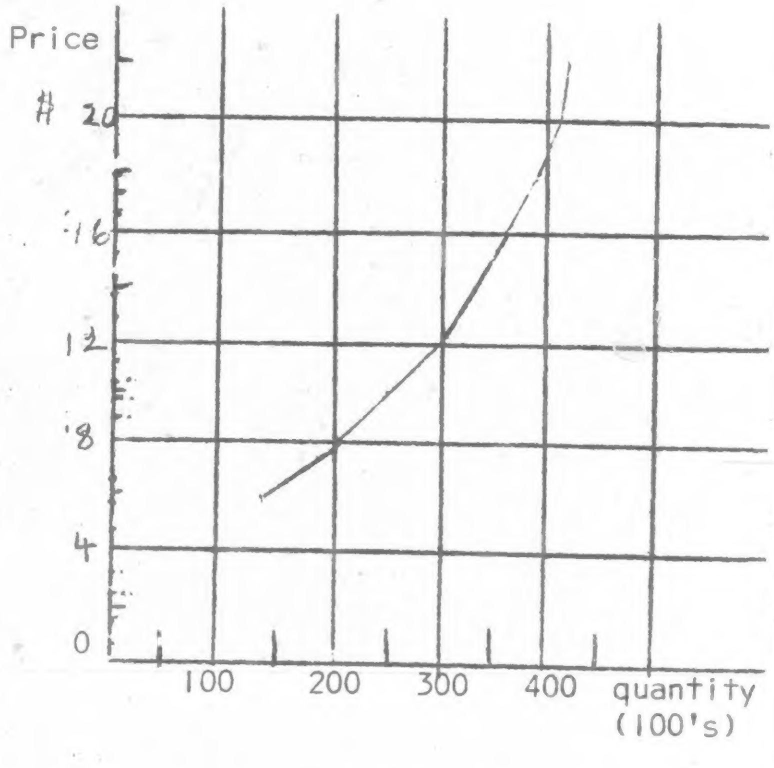


Figure 4
Market Supply Curve for
Skateboards, August, 1965

Why the Amount Supplied is Greater at Higher Prices

The market supply schedule and curve show that skateboard producers vary output with price, and that there is a positive relation between price and quantity supplied. It is important to explain why this positive relation exists because it is true for most markets. In general, producers are willing to increase output per day over their current production, only if there is an increase in price. WHY?

This is the explanation. At high levels of production, cost per unit is higher than it is at lower levels of production. For some reason it costs more to produce a skateboard when output is 500 skateboards a day than to produce 400 a day. Therefore Ace will produce the larger amount only if the price they can get makes it worthwhile.

The real question is, why does it cost more to produce a skateboard when output is 500 skateboards a day than when it is 400 a day? One might easily expect that the average cost of producing a skateboard would be less at higher levels of output, because skateboards could then be mass-produced. But that's just the point. If Ace Skateboards wants to increase daily output temporarily, say for a month, from 400 to 500, it will not pay to buy new equipment to increase production. If the company were considering doubling output permanently, management might decide to expand operations and build a new factory, but even so, it might take a year before the new plant is in operation.

What we're saying is that if a manufacturer wants to increase output per day using his existing equipment, costs increase more than proportionately to the increase in output because of the law of diminishing returns.

The law of diminishing returns states that if the amount of one input is fixed, there is a decline in additional output yielded per additional unit of the variable input. That is each additional worker hired contributes fewer additional skateboards. It costs more to produce the extra skateboards; therefore the average cost of production goes up.

Thus, the ratio $\frac{\text{Increase in output}}{\text{Increase in input}}$ gets smaller at higher levels of output. Under these conditions the average cost of producing a skateboard is higher at higher levels of production, because less additional output is produced for each additional man; and the additional man is paid the same hourly wage the other workers are receiving.

The effect on costs of the law of diminishing returns is shown for Ace Skateboards in Figure 5 and Table 4 below. The graph shows total cost of production at different levels of daily output. The fact that the slope of the total cost curve gets steeper at higher levels of output means a greater addition to cost per 100 units of increased output.

Prove this to yourself by using the curve in Figure 5 on the next page, to figure out the additional cost necessary to increase output from 500 to 600 boards a day. How much increase in cost is necessary to increase output from 600 to 700 boards a day?

Your answers should be 1200 and 1550.

To summarize, in the short-run (when firms can only increase production by using the existing plant more intensively) there is a fixed amount a firm will produce at each price. Firms will produce (& be willing to sell) larger amounts at higher prices. At any particular market price, they will not sell more than the amount shown by their supply schedule, because higher output rates will also mean higher average costs.

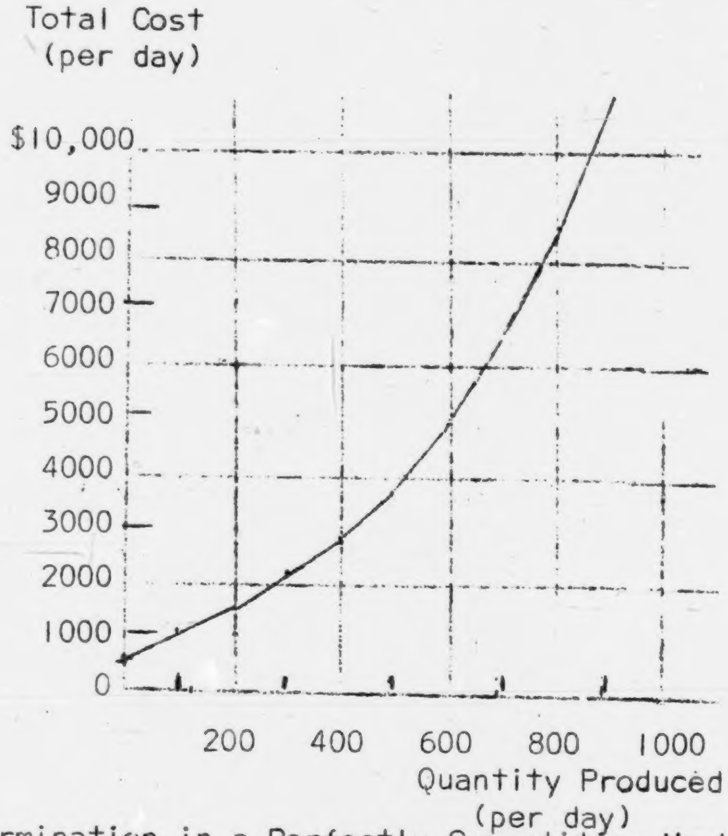
Table 4

Total Cost of Producing Skateboards at Different Levels of Output Per Day

Total Output per day	Total Cost per day
0	$ 500
100	1,000
200	1,500
300	2,100
400	2,900
500	3,900
600	5,100
700	6,650
800	8,500
900	11,000

Figure 5

Total Cost Curve, Ace Skateboards



VII. The Market Model & Price Determination in a Perfectly Competitive Market

Skateboard Market Model

Table 5 and Figure 6 combine information on market demand and market supply of skateboards for August 10, 1965. Market demand and market supply curves are shown in the same graph in Figure 6. The two curves can be plotted on the same diagram because both curves show a relationship between the same two things, price of a product and quantity. Figure 6 summarizes the market conditions in the skateboard market on August 10, 1965. The diagram is a model of the market which enables us to predict market price and quantity sold.

Table 5

Market Demand and Supply
U.S. Skateboard Industry,
August, 1965

Price	Quantity Demanded (1000's of boards per week)	Quantity Supplied (1000's of boards per week)
$ 6.00	420	145
8.00	380	200
10.00	340	250
12.00	300	300
14.00	260	337
16.00	220	366
18.00	180	390
20.00	140	410
22.00	100	425
24.00	60	435

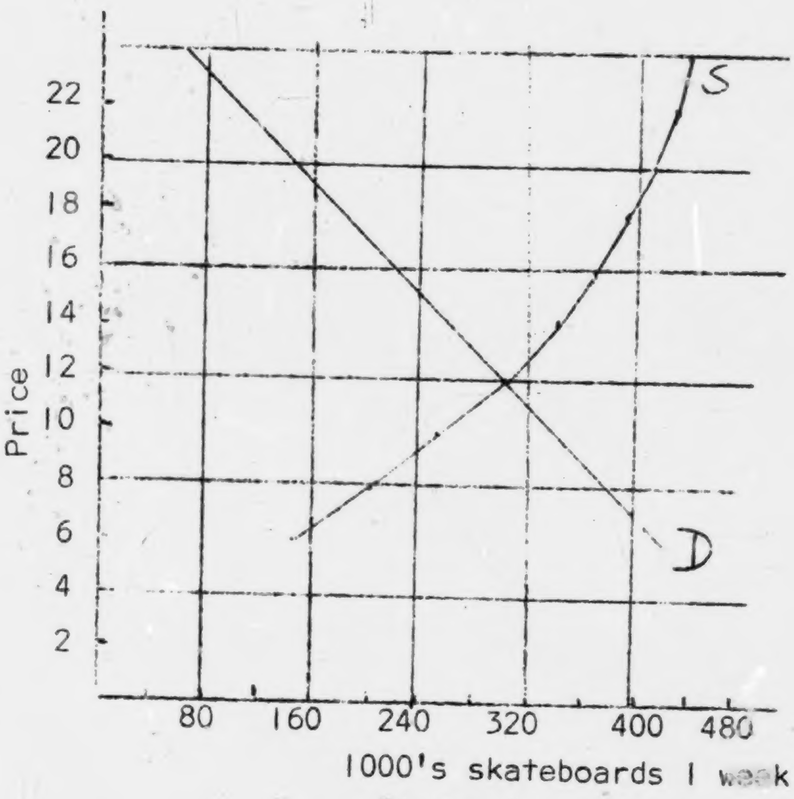


Figure 6
Market Demand & Supply
Skateboard Market
August 10, 1965

A Perfectly Competitive Market

Perfect Competition. Before we can use this model to show how price and quantity sold are determined under conditions of perfect competition, it is necessary to define what those conditions are. The following are the necessary conditions for perfect competition. First, there are many, many buyers and sellers; each is so small that if they left the market no one would notice. In fact, there are so many, small buyers and sellers that it is even impossible for some of them to get together into a group large enough to effect the market. Second, all producers must produce exactly the same thing--with no differences whatsoever. Third, there is completely free entry into the market; anyone who wants to can buy or sell the product. For sellers, this means that it costs nothing and takes no special ability to go into business. Finally, all buyers and sellers are rational economic men.

This means that every one acts to make the greatest possible monetary gain for himself and, in addition, that everyone is free to so act.

Although it is impossible to find a real life example of "perfect" competition (just like it is impossible to find a "perfect" child or an honest man), we can set up the skateboard model market so that it is perfectly competitive. We have assumed that there are 500 skateboard manufacturers, and probably 1000's of buyers from sport stores who buy skateboards from the manufacturers. This means that there is a great deal of competition between buyers and sellers. No one person or business can influence price. Because one firm supplies such a small percent (1/500) of the market, each firm must accept the price established in the market and sell at that price. Under these competitive conditions, if a firm should try to sell at a price higher than the market price, it would not be able to find any buyers, because buyers can buy the skateboards cheaper from some other producer. The manufacturer can sell at a price lower than the market price if he wishes, but that would be foolish because he can sell all he can produce at the higher price.

Figure 6 predicts the final outcome of this competition; the price will reach $12.00 and will stay there. Let's use what we know about perfect competition to see why. We will prove that $12.00 is the market price by showing that there is no other stable price. Assume the price is $16.00 At that price according to the demand curve, the total amount of skateboards demanded is 220,000. Manufacturers are willing to sell more, but they can't find buyers at this price. At $16.00 there is an excess supply of 46,000 boards. The result is that sellers will reduce the price to increase the amount they sell. So the price falls to, say, $14.00, but there is still and excess supply of 37,000 boards because at $14.00, 337,000 skateboards are offered for sale but buyers will buy only 260,000. Although the excess of quantity supplied over that demanded is declining, there is an excess. Sellers will bid the price down further, and as they do, the disparity declines between amount offered and amount buyers are willing to buy. Finally, when the price reaches $12.00, quantity demanded and quantity supplied are both 300,000 per day. Every buyer at $12.00 can find a seller and vice-versa. There is no reason for anyone to offer to buy or sell at a different price because there is a source of supply for every buyer who wants to buy at that price. The market price will stay at $12.00, and 300,000 skateboards will be sold each day.

The same sort of reasoning can be used to prove that if the price starts below $12.00, competitive bidding by buyers will force the price up to $12.00. When the price is less than $12.00, quantity demanded exceeds quantity supplied, and the price will be bid up; if price is higher than $12.00, quantity supplied is greater than quantity demanded, and the price will be bid down to $12.00. Under existing market supply and demand conditions, the price will be $12.00, because this is the only price where demand equals supply. Thus, competition between buyers and sellers leads to a stable market price which equates quantity demanded and quantity supplied.

A Summary

The preceding paragraphs show how price and quantity sold are determined in a perfectly competitive market where no individual buyer or seller sets the price. Instead, through competitive bidding, the price automatically adjust up or down toward the equilibrium price, the price where quantity demanded equals quantity supplied. If the price is higher than the equilibrium price there is excess supply and sellers will compete with each other for the available buyers and will force the price down, eventually to the equilibrium price. If the price is too low, then there is excess demand and the buyers will compete with each other for the available supply, thereby forcing the price up to the equilibrium price. By this process of competitive bidding, the commodity is transferred from sellers to buyers and distributed to those buyers who are willing to pay the price. There is no centralized decision making, but the market operates as if there were (an invisible hand.)

CHAPTER II

PREDICTING PRICE CHANGES:
THE LAW OF SUPPLY AND DEMAND

I. Introduction

We have discovered the mechanism which sets prices in perfect competition. The next task is to use the model to find out how, through perfect competition, sellers automatically adjust output to reflect changing consumer demand and new techniques of production.

This happens (producers adjust quantity produced) because prices change and sellers react to price changes. In this chapter we will use the model of perfect competition to describe why prices change and to predict the direction of price and quantity changes (whether they go up or down). Then, in the next chapter, we will use the model to prove how these price changes force sellers to behave.

We have already proved that in perfect competition the price and quantity sold is determined through the competitive bidding of buyers and sellers. Once the equilibrium price is reached, the market is in balance and the price and quantity sold per day will remain the same until something jars the market. But what can jar the market--what makes the price change and is it possible to predict the changes? That's the heart of this chapter.

The answer is fairly simple. Prices change whenever the market changes. Since the market is made up of buyers and sellers, the market will change whenever either the demand side or the supply side changes. For instance, Figure I shows a change in demand in the skateboard market from the original demand (D_1) to D_2. With this new demand, there will be a new equilibrium price and quantity sold; in this case the new market price will be $10.00, and 250,000 skateboards per week will be sold. To be able to predict such price changes, it is necessary to be able to predict such shifts in demand or supply.

Table I
Market Demand and Supply
Skateboards, 1965

Price	Initial Demand (1000's	Initial Supply Boards	New Demand per Wk)
$ 6.00	420	145	330
8.00	380	200	290
10.00	340	250	250
12.00	300	300	210
14.00	260	337	170
16.00	220	366	130
18.00	180	390	90
20.00	140	410	50
22.00	100	425	10
24.00	60	435	0

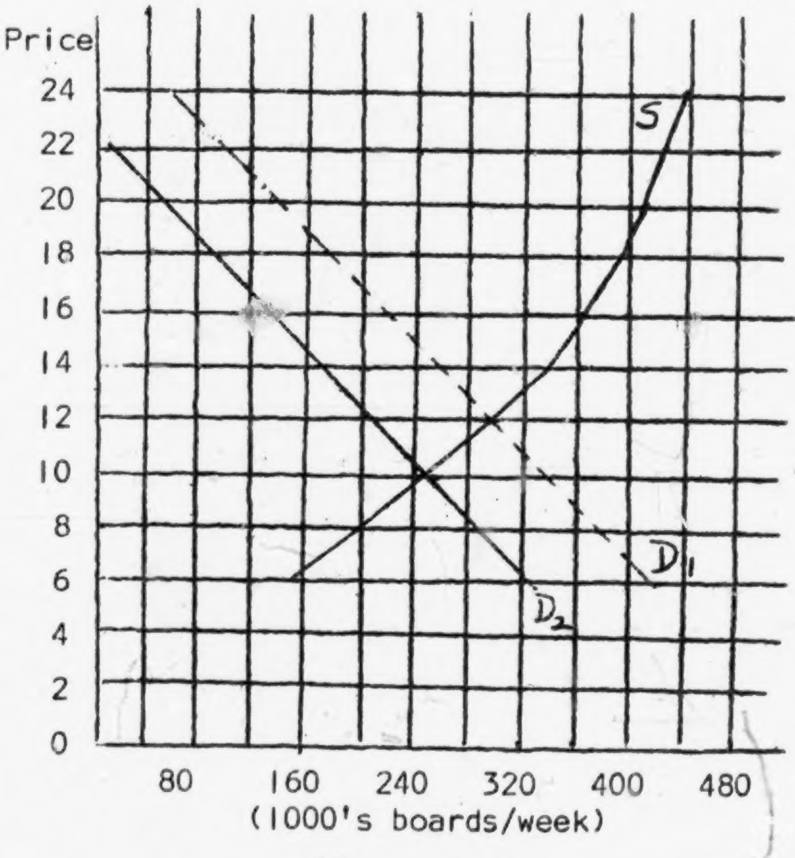


Figure I
Market Demand and Supply
of Skateboards

II. Market Demand Conditions

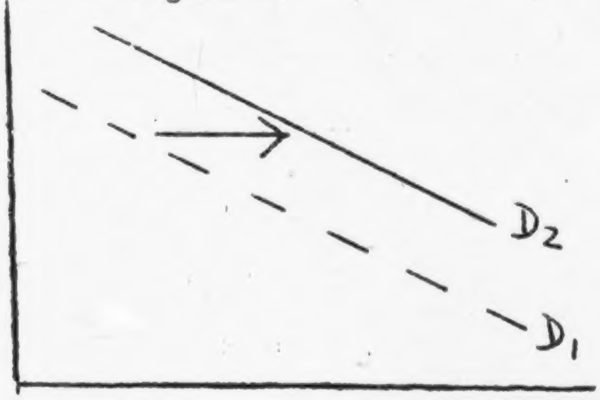
In the last chapter we always took market demand and supply for granted. We always talked about the demand curve as describing market demand for a particular day. We never inquired into what determined market demand. For instance, why, in Figure I above, is initial market demand described by D_1? Why isn't the curve to the left or right of D_1? That is, why is there a particular price-quantity relationship that exists on a certain day?

The market demand--the price-quantity relationship--which exists at any particular time is determined by all the things other than price which affect the quantity of a thing people want to consume. These include such things as taste, income, other prices and availability of substitutes. These factors which determine market demand for any particular time period are called MARKET DEMAND CONDITIONS; they include anything which affects the demand price-quantity relationship (the amount people will buy at each price).

For instance, people's income is an important demand condition because income determines how much money people have to spend. If incomes go down (because general business conditions decline and there are large numbers of unemployed), then less butter and fewer cars will be sold at the current prices. The reduced incomes will mean a DECREASE IN DEMAND. That is, the demand curve for a product will shift to the left. Figure I shows a decrease in demand.

When demand decreases, the price-quantity relationship changes so that at each price people will buy less than before. For instance, in Figure I, at the old equilibrium price of $12.00, when demand decreases so that D_2 describes the new demand, people will only buy 210,000 skateboards a week instead of the 300,000 they would have bought before the decline in demand. In fact, according to Table I and Figure I, at every price people will now buy 90,000 fewer skateboards than they would have bought previously.

If market demand conditions change to bring about an INCREASE IN DEMAND, then at each price people will buy a larger amount than formerly. If incomes go up, people will have more money to spend and so, at $1.39 a pound, housewives will buy more steak per week than they did before the paychecks increased. An increase in demand is shown by a shift in the demand curve to the right of the old demand curve as in Figure 2.



An increase in demand means that at each price, people will buy more when demand increases.

Figure 2
Increase in Demand

There are many things which affect demand for products; that is, there are many demand conditions, but here we list a few of the important conditions which influence people's decisions about how much to buy. For each, you can predict the effect a change in the condition will have on demand:

1. Income. An increase in income will mean an increase in demand; a decrease in income means a decrease in demand for most products.

2. The price of substitutes. If prices of substitutes go down, demand for the product will decrease. Thus, if the price of air transportation from New York to Chicago drops significantly, fewer train tickets will be sold at the current train fares.

3. Anything which would affect buyers' tastes, such as the appearance of a new substitute or a change in advertising. When cars became popular, the demand for buggies declined. Introduction of a new substitute will cause a decline in demand for the older product.

4. Sources of purchasing power other than income, such as the size of people's bank accounts or holdings of savings bonds, or the ability to borrow money. If interest rates go up, the demand for cars will drop because it costs more to finance the car. Or, if loans are really hard to get, lenders will not lend at all to certain people, which would mean a decrease in their demand for anything they have to buy on time, like a car or a house.

5. People's expectations about the future, such as their expectations about the future price of the commodity or changes in their income. If people think the country is about to go to war, they will run out and stock up on staples. Demand for staples increases temporarily because people will try to hoard the available supply. Or, if people are afraid they will be laid off in six months, their current demand for goods will decrease because they will save current income by buying less now.

To summarize, if any demand condition changes, the demand side of the market changes, and, generally speaking, we can predict whether demand will increase or decrease. Any change in demand will show up in the market model as a shift in the demand curve and a new equilibrium price. In Figure I, when demand decreases to D_2, at the old equilibrium price of $12.00 there is an excess supply of 90,000 skateboards. Therefore, competition will bring a drop in price and a new market price will emerge--in this case, $10.00.

III. Market Supply Conditions

MARKET SUPPLY CONDITIONS are all the things which influence the amount sellers will supply at each price; they are the things which underlie the market supply curve. The major supply conditions are various factors which affect cost of production and the numbers and size of sellers in the market. If costs go up, then sellers will not be willing to sell as much at the current price, and supply declines. On the other hand, if costs go down, supply will increase; that is, sellers will be willing to sell a larger quantity at each price. Another supply condition is the number of sellers. If new sellers come into the market, supply will increase; if sellers leave the market, supply decreases--less will be sold at each price. Thus, the major supply conditions are:

1. prices, or the cost of using each input;
2. techniques of production--technology, organization of production, kinds of inputs used and the proportions of inputs used together;
3. the nature of the product itself;
4. the number and size of sellers.

If wage rates increase, or if the quality of labor available declines, labor costs increase, and the amount of output Ace Skateboards will be willing to produce at the current price will drop. If a new sanding machine is invented which reduces sanding time by one-half, and requires less labor, the effect will be to change the proportion of capital to labor used, and to reduce cost per unit produced. The result will be that the manufacturer will be willing to produce more output at the current price using this new machinery. If someone invents a better and more expensive ball-bearing to use on skateboards, this improvement in quality of skateboards will raise the cost of producing a skateboard, and producers will not want to sell as many boards at the current price.

In general, whenever there is some change in supply conditions (number of sellers or cost of production), there is a change in supply (the amount offered for sale at each price). This means that there is a new market supply schedule and curve. Assume that wages rise in the skateboard industry. The amount supplied at each price will now be less. This is shown in Table 2 and Figure 3. Compare the new and old supply curves and you will see that for each price, less is supplied. This is an instance of a DECLINE IN MARKET SUPPLY--less is produced for sale at each price. A decline in supply shows up in the supply graph as a new supply curve which is to the left of the old supply curve. When supply declines, the supply curve shifts to the left. To see for yourself the effect of the decline in supply, notice that in Figure 3 and Table 2, when supply declines, at $12.00 quantity supplied drops from 300,000 to 200,000 boards. In fact, at each price, 100,000 fewer skateboards would be supplied.

When costs drop, SUPPLY INCREASES; firms offer more output for sale at each price. The new supply curve is to the right of the old one; the supply curve shifts to the right when supply increases. If a new machine reduces cost per skateboard, then supply will increase, and the new supply curve will be to the right of the old one. At each price, more skateboards will be offered for sale. Supply will also increase if new firms come into the market. With a larger number of sellers, more will be sold at any price.

Table 2
Market Supply of Skateboards after a Wage Increase in Industry

Price	Initial Supply	New Supply
	(1000's skateboards per week)	
$ 6.00	145	45
8.00	200	100
10.00	250	150
12.00	300	200
14.00	337	237
16.00	366	266
18.00	390	290
20.00	410	310
22.00	425	325

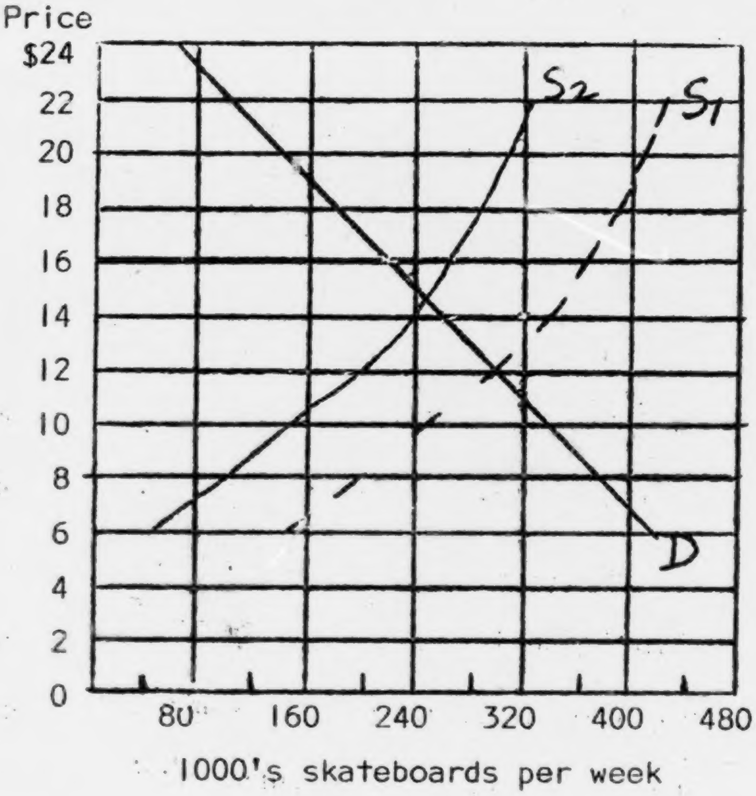


Figure 3
Change in Market Supply

IV. Price Changes and the Laws of Supply and Demand

Price and amount sold changes whenever demand or supply conditions change. The laws of supply and demand are laws which predict the direction of the change in price and quantity sold when demand or supply changes.

The Effect on Price and Quantity Sold of a Change in Supply Conditions

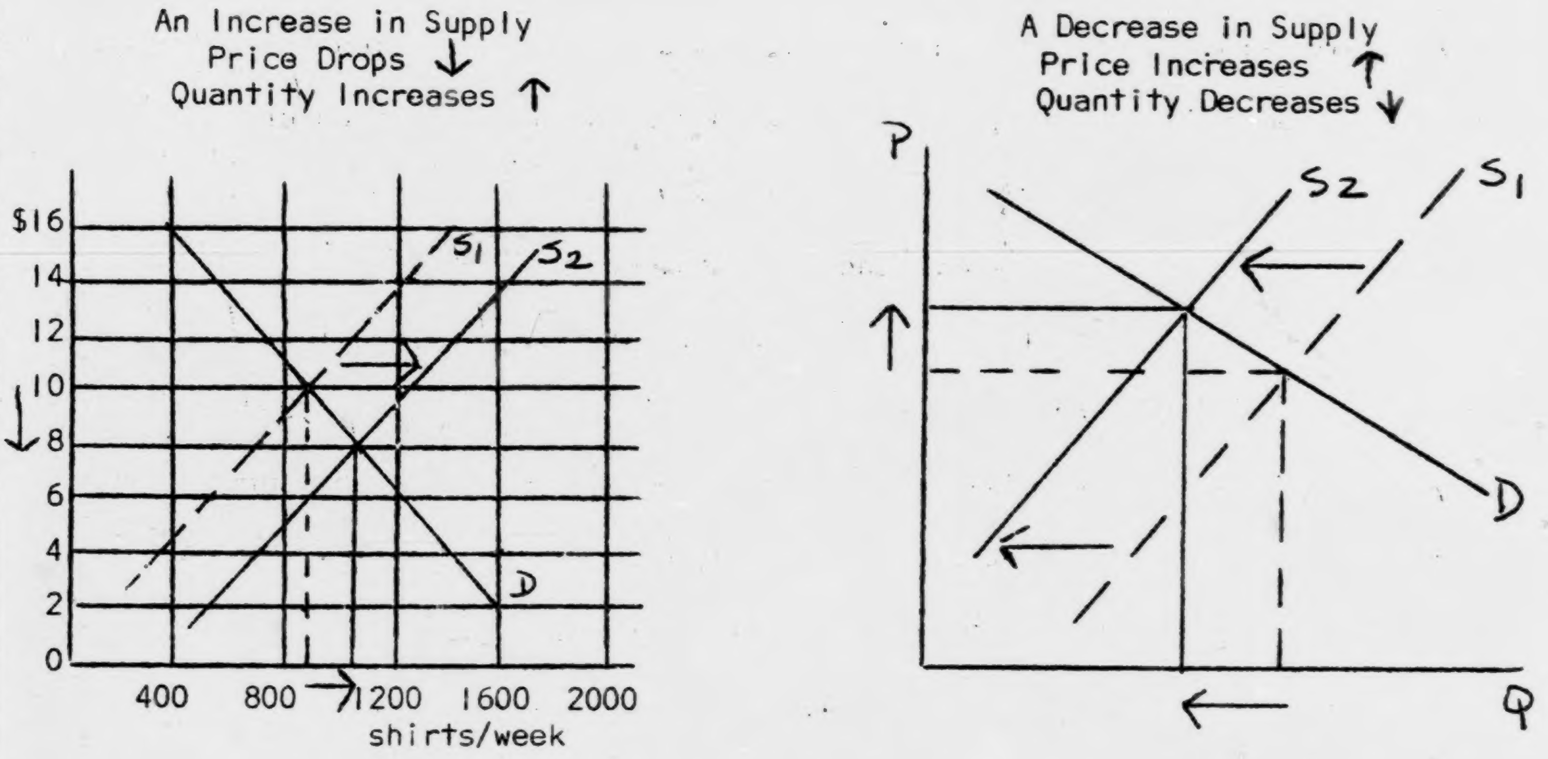
In the skateboard example, what effect does the rise in wages shown in Figure 3 have on market price and quantity sold? The new supply conditions create a new price-quantity relationship which is illustrated by a new supply curve (S_2). The original supply curve (S_1) is no longer relevant, so mark it out with your pencil. Under the new market conditions, the new price is a little less than $15.00, and about 245,000 skateboards will be sold per day. Under the new supply conditions, the old price is too low. At $12.00, manufacturers are now only willing to sell 200,000 skateboards a day, but buyers still want to buy 300,000 a day. Unsatisfied buyers will be willing to pay more to get skateboards. As they bid up the price, buyers buy fewer skateboards, and sellers are willing to sell more; the gap between quantity supplied and demanded closes as the price gets closer to $15.00. All excess demand is eliminated when the price reaches $15.00, and the price will remain there until market conditions change again.

This reaction of market price and quantity to a change in supply conditions can be stated as a general rule, and this rule is the first half of the LAW OF SUPPLY AND DEMAND. The rule is this:

> In any market with given demand conditions:
>
> a. if supply decreases, the price will increase, and the quantity sold will decline;
>
> b. if supply increases, the price will fall, but the quantity sold will increase.

This reaction is shown in the two diagrams in Figure 4. The diagram on the left shows the market reaction to an increase in supply; the diagram on the right shows the reaction to a decline in supply.

Note that the rule about the market reaction to a change in supply is prefaced by the condition that demand conditions are given. This means that the rule applies only when the demand curve stays put, when demand conditions stay the same.


An Increase in Supply
Price Drops ↓
Quantity Increases ↑

A Decrease in Supply
Price Increases ↑
Quantity Decreases ↓

Figure 4
The Effects of Changes in Supply on Market Price and Quantity Sold

The Effect on Price and Quantity Sold of a Change in Demand Conditions

What happens if demand conditions change? In the skateboard market example described in Figure 1, a decline in demand (due to a decline in people's incomes) caused price and quantity sold to decline. This is always the effect of a decline in demand, if demand declines and supply conditions remain the same. When demand conditions change, the market changes. There is a new demand curve; the old one no longer describes the demand side of the market and price and quantity sold will change. In Figure 1, with the decline in demand depicted by D_2, at the original market price of $12.00, there will be excess supply when demand declines. Suppliers will compete for sales and this competition will force the price down until excess supply is eliminated--the price will eventually settle at $10.00 and only 250,000 skateboards will be sold per week.

Likewise, when demand increases there is a new demand curve to the right of the old one (see the right-hand graph in Figure 5) and price and quantity sold will increase. The reaction of market price and quantity sold to a change in demand conditions can be stated as a general rule--the second half of the LAW OF SUPPLY AND DEMAND. The rule is this:

In any market with given supply conditions:

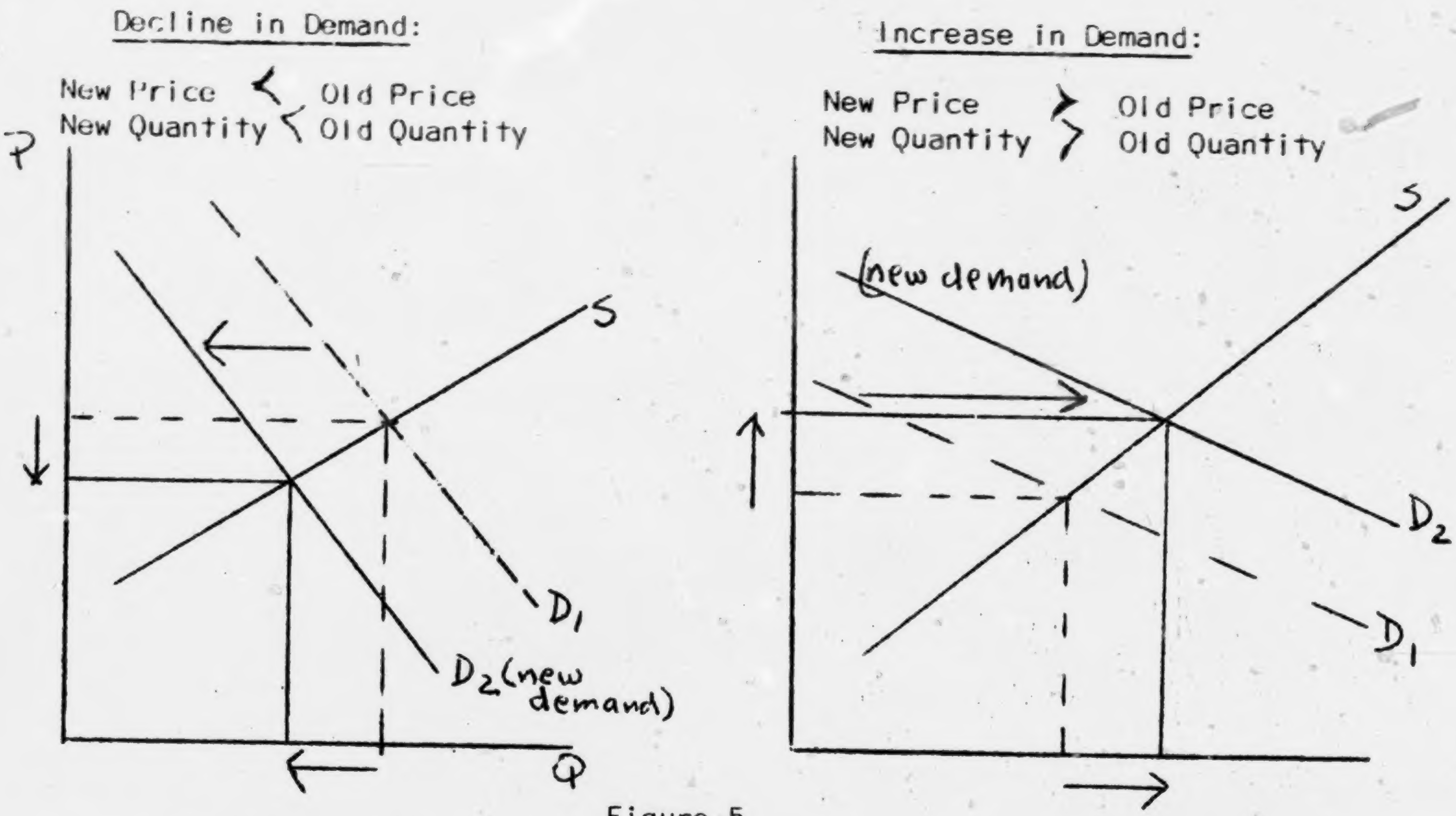
a. if demand increases, the price and quantity sold will increase;

b. if demand decreases, the price and quantity sold will decrease.

Again, these predictions are true only if we assume that the supply side of the market remains unchanged--the supply curve does not shift.

Figure 5 shows graphically the effect of an increase or decrease in demand on the market model. The left-hand graph shows a decline in demand--the new demand curve, D_2, is to the left of the old one and the new price is lower than the old price, the new quantity sold is less than the old quantity sold. The right-hand graph shows an increase in demand--the new demand curve is to the right of the old demand curve. Because of this shift in the demand curve, the D_2 crosses the supply curve at a different price and quantity sold than did D_1--a point where both price and quantity sold are greater than before the increase in demand.

Notice that in both cases, only one supply curve is shown. This means that we are assuming that supply remains unchanged. However, even though supply is unchanged, when demand increases a greater quantity is supplied. This is not because supply has changed, but because buyers are willing to pay more for the same amount and, under the supply conditions expressed by the supply curve, sellers will sell more at the higher price.



Decline in Demand:

Increase in Demand:

New Price < Old Price
New Quantity < Old Quantity
P
S
D₁
D₂(new demand)
Q
New Price > Old Price
New Quantity > Old Quantity
S
(new demand)
D₂
D₁

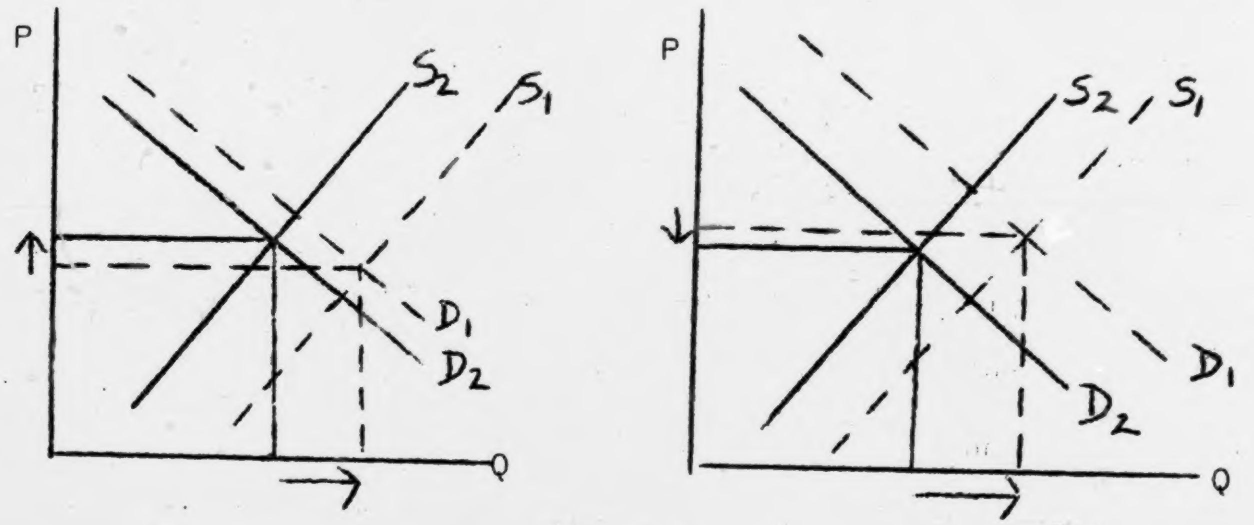
Figure 5
The Effect on Price and Quantity of a Change in Demand

The Effect on Price and Quantity Sold of a Change in Both Supply and Demand

Predicting the effect on price and quantity sold of a change in both supply and demand is more tricky, but we can use the same graphic analysis to draw general conclusions. Here we will just barely outline these predictions. If you are interested in really learning how to use the graphs to make predictions, then complete the program in the workbook on the Law of Supply and Demand.

In making these predictions, you simply combine what you know about the effect of a change in demand and a change in supply to predict the total effect. For instance, the left-hand graph in Figure 6 shows the effect of a decrease in demand and a decrease in supply. Note that in this case, quantity sold declines and price increases. The right-hand diagram also shows the effects of a decrease in demand and in supply, but here, price drops as well as quantity sold.

We can understand why by looking at the two effects separately. When demand decreases, price and quantity sold drop. When supply decreases, price increases and quantity sold decreases. Now, if both demand and supply decrease, quantity sold will certainly decline because both effects cause quantity sold to decline. However, a decline in supply and a decline in demand have opposite effects on price. Therefore it is not possible to predict what happens to price unless you use a diagram. For instance, in the case shown in the left graph, the decline in supply has more effect than the decline in demand and price increases. However, in the case depicted on the right-hand graph, demand declines enough to cause price to drop.



A decline in D & S brings about an increase in P & Q

A decline in D & S brings about an increase in Q and a decrease in P

Figure 6
The Differing Effects of a Decrease in Demand and Supply

This kind of analysis can be applied to the other three cases of changes in both demand and supply:

an increase in supply and demand:	An increase in demand increases P and Q; an increase in supply decreases P, increases Q; therefore, an increase in demand and supply will increase Q and P may rise or fall.
an increase in supply and a decrease in demand:	An increase in supply decreases P, increases Q; a decrease in demand decreases P and Q; therefore, in this case, P will decrease and Q may increase or decrease.
an increase in demand and a decrease in supply:	An increase in demand increases P and Q; a decrease in supply increases P, decreases Q; therefore, P will increase and Q may increase or decrease.

Summary of the Law of Supply and Demand

The LAW OF SUPPLY AND DEMAND is a basic law describing market behavior; it describes the effect of buyer and seller competition on price and quantity when demand and supply conditions change. The law is true even when a market is not highly competitive. The law is important because it permits us to predict the effect of changing market conditions--supply and demand conditions--on the amount sold and the market price. In this chapter we have not only stated the law, but we have used market demand and supply curve models to prove that the law works as it does. In the next chapter we will use the law and the market model to predict market conduct of purely competitive sellers; and then to predict the effect of this competition on the allocation of resources.

ECON 12
UNIT 11

CHAPTER 12

MARKET RESOURCE ALLOCATION: THE CASES OF PERFECT COMPETITION AND PERFECT MONOPOLY

I. Introduction

In the last chapter we showed that in a perfectly competitive market, the price of the product changes whenever demand or supply conditions change. If demand for shoes increases, the price of shoes will go up as will the number of pairs sold per week. If demand stays constant and the cost of production increases, then supply will decline, the price of shoes will increase, and the stores will sell fewer pairs of shoes per week.

According to the analysis in the last chapter, whenever market conditions change in a perfectly competitive market, the price and quantity sold will change. Since demand and supply conditions change frequently, price will also change frequently.

In this chapter we will look at the effect of these constant price changes on sellers' decisions about what and how much to produce. We will show how competition between sellers assures that the competitive market operates like a cybernetic system in which sellers will react to price changes by altering quantity supplied in order to conform to changes in consumer demand or to changes in the cost of production. We will show that all the markets taken together guarantee that a perfectly competitive market economy would always, automatically operate to produce exactly what consumers want at the lowest possible cost. In the model of a perfectly competitive world, consumers are sovereign. Although sellers decide what to produce, they are forced by competition to produce what consumers want. The invisible hand of the market makes the consumer king.

In the second part of this chapter we will contrast the world of perfect competition with the world of perfect monopoly. Perfect monopoly is the opposite of perfect competition, for there is no competition whatsoever. To show the effect of no competition we will construct a model of perfect monopoly. Then, we will use this model to answer the same questions about perfect monopoly that we answered for perfect competition. That is:

1. How is price determined?
2. When do prices change?
3. How motivated is the monopolist to cut costs and to improve the quality of the things produced?
4. Can the monopolist prevent competitors from entering the market?
5. How efficiently are resources allocated? Is there consumer soveriegnty in a perfect monopoly world? If not, who is king? And does the system operate like a cybernetic system?

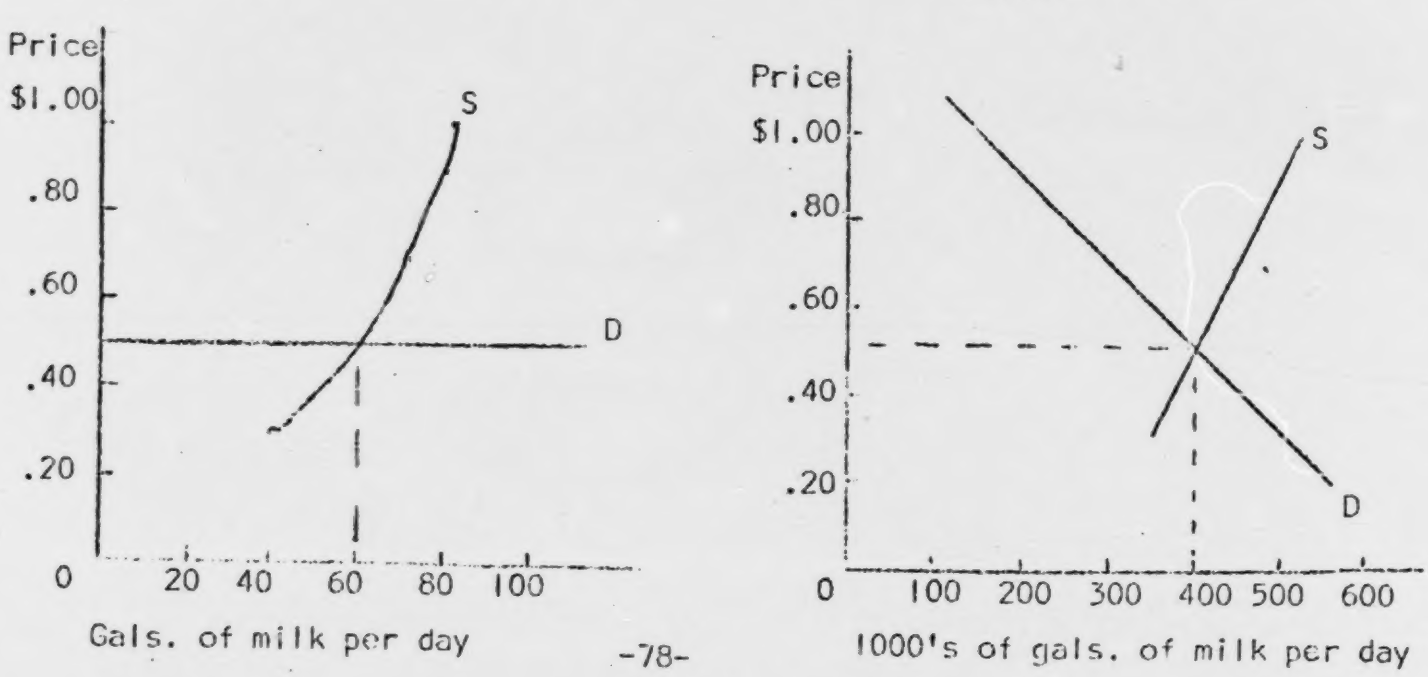
In the following chapter, and in the industry case studies which accompany this unit, you will be able to apply the same procedures , which we have already developed for analyzing perfect competition and perfect monopoly to study the effects of competition in real markets. We will discuss this at greater length at the end of the chapter.

II. Competitive Conduct in Perfectly Competitive Markets

In this section we will study the conduct (decisions) of the individual sellers in a competitive market. You have already seen that, in a perfectly competitive market, the price of the product is determined through the competitive bidding of all of the buyers and sellers--through the combined effect of all exchanges. This means that no one buyer or seller can set price; each person in the market must buy or sell at the price set by the market. The only decision open to a seller is how much to sell at the market price.

The conditions confronting an individual seller in a perfectly competitive market, and his response to these conditions, can be illustrated by using the model of the supply and demand curves which were developed in the last three chapters. Figure I, below, shows the conditions in a purely competitive milk market. The left hand diagram shows the demand and supply conditions for an individual firm, and the right hand diagram shows the conditions for the market (all of the individual firms).

Figure I



One Firm

Market

The individual farmer's demand and supply curves (left) show the demand conditions he faces and what his supply would be at different prices. The demand curve is a horizontal line drawn at 50 cents per gallon. He can sell ass he can produce at this price but he couldn't sell a drop at 51 cents. At 50 cents per gallon, he sells 60 gallons of milk per day. He won't produce any more unless the price goes up because his production costs rise as he raises production. For example, in order to produce 70 gallons of milk per day, he would either, 1) have to feed his cows more and better food, or 2) add more labor for their care. If the price falls, this farmer will decrease production--at 40 cents per gallon his production falls to 50 gallons per day. However, if the price falls below 30 cents, he will not produce at all because it would cost him more to produce the milk than not to produce any milk.

The right hand diagram shows market demand and supply. At 40 cents per gallon, consumers are willing to buy 400,000 gallons of milk per day and farmers are willing to supply 400,000 gallons of milk per day. At 40 cents, consumers would buy 450,000 gallons but farmers would only produce 375,000 gallons, and at 60 cents, farmers would be willing to produce 425,000 but consumers would only be willing to buy 350,000 gallons. At either 40 cents or 60 cents, demand and supply are not in balance. Only at 60 cents will demand just equal supply.

Using the model in Figure 1, we can trace through what effects a change in market demand would have on the individual firms and on the market.

Let us assume that Figure 1 describes the milk market under perfect conditions--under conditions in which sellers are supplying milk at a price which enables them to cover the lowest possible costs of production and to make a reasonable profit besides. By reasonable, we mean a rate of return on investment which is comparable to that earned in other industries. The industry is stable. Dairy farmers are earning an adequate enough income to encourage them to continue to produce milk (60 gallons a day), but the milk business is not so profitable that new people want to enter the business.

Figure 2, below shows the effects of an increase in demand for milk. The right-hand diagram shows that the market demand curve has shifted to the right from D_1 to D_2. The increase in demand leads to a rise in the quantity of milk sold from 400,000 gallons per day to 430,000 gallons and rise in price to 63¢ per gallon. The left-hand diagram shows the effect on the individual farmer and his reaction. The market price is now shown by D_2, 63¢, and at this new price the farmer will increase production to 67 gallons of milk. This increased production of all the individual farmers supplies the market w ith the additional 30,000 gallons per day sold under the new demand conditions.

Thus, the immediate effect of the rise in market demand is for the price to rise so that existing milk farmers will be willing to increase milk production. This is the short-run reaction of sellers to an increase in demand, but there is a more profound reaction than this. The increase in demand has probably meant an increased profit for milk farmers. If this is so, soon other farmers will begin to notice that dairy farming is more profitable than the kind of farming they are engaged in. Because anyone is free to enter dairy farming, these other farmers will switch to dairying and when they do they effect market supply in the milk market. The larger number of producers of milk will mean an increase in market supply. The market supply curve will shift to the right of S_1 and market supply will increase until the price is back down again to the original price, 50¢ a gallon, the price which just permits dairy farmers to earn a normal rate of return on their investment. At this point, new farmers will stop entering the market, because at 50¢ per gallon they will not make any greater profit than they are making in the line of production they are already engaged in.

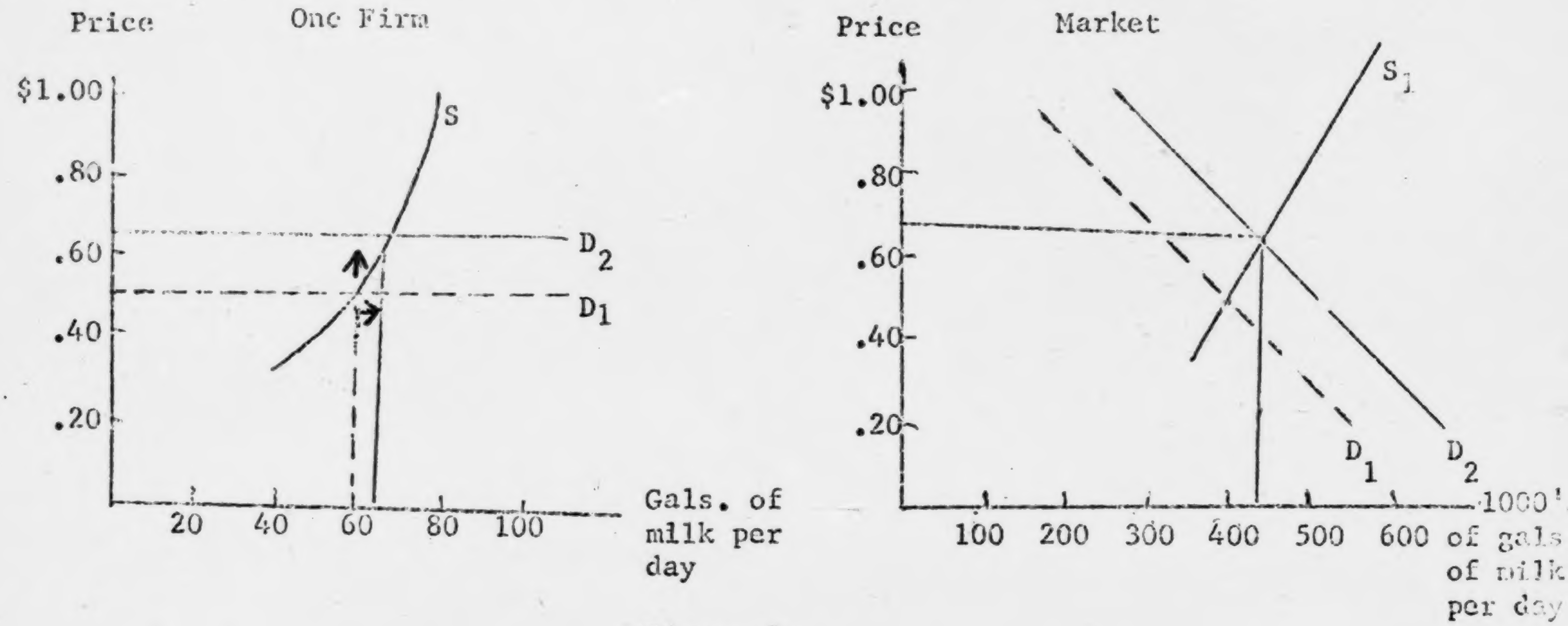


Figure 2

Short-run effects of an increase in demand

The market is back to normal again and the only permanent effect of the increase in demand is an increase in the number of dairy farmers. Supply has adjusted to demand. The price change caused by the increase in demand increased profit, thereby encouraging other firms to enter the dairy business. These new firms increased market supply, cuasing the supply curve to shift to the right, which meant that the market price dropped back down to 50¢. This new situation is shown in Figure 3. The new market supply and demand curves are D_2 and S_2. Compare them with the original market supply and demand curves D_1 and S_1, and you will see that the market price is the same, but that the quantity sold is larger as a result of the large number of farms. After all of the market changes occur, the individual dairy farmer is no better or worse off than he was before the increase in demand. He is back producing 60 gallons a day and selling at 50¢ per gallon.

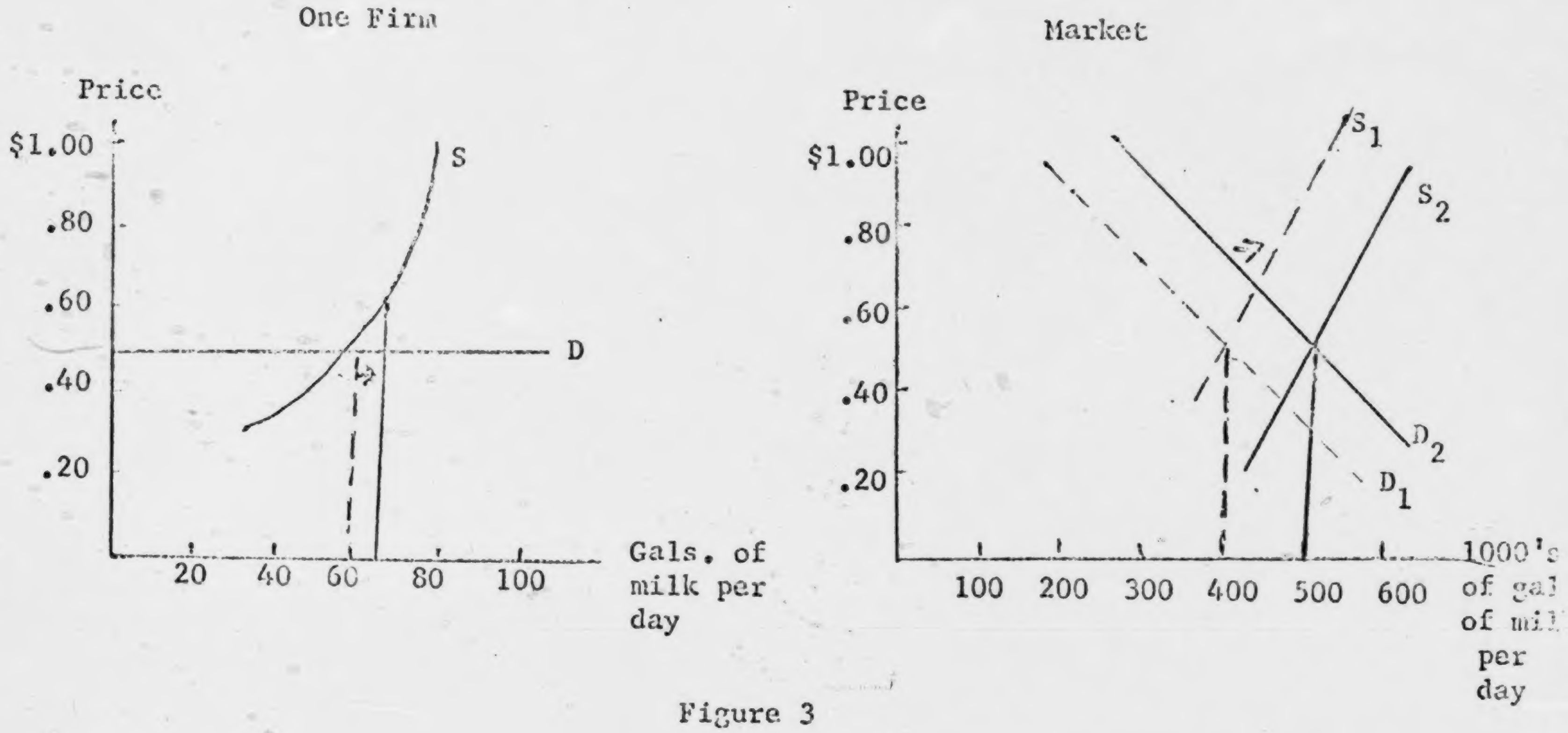


Figure 3

Long-run Effect of an Increase in Market Demand

In the analysis just completed we used the law of supply and demand to prove that market supply will adjust to market demand in a perfectly competitive market. The adjustment process comes about because of the price changes which occur when market demand or supply change, and because profit rates usually change when prices change. In a perfectly competitive market, whenever supply or demand conditions change price changes. These price changes affect sellers' profits which, in turn, effect sellers' decisions about how much to produce and whether or not to shift into some other line of production.

Because there is free entry into the market in perfect competition, whenever firms are earning excess profits, new firms will enter the industry and this new competition will force the price down, eliminating the extra profits. Thus, competition (free entry) insures an automatic adjustment of supply to demand and automatic elimination of excess profits. Consumers get what they want and most of the time they can buy it at a price which just covers the cost of production and a reasonable profit for the business owners.

We can even show that the firms in a competitive industry must produce as efficiently as possible. That is, they must always use the latest techniques of production and they must strive for efficient management. This is because of the fact that in perfect competition the price usually just covers the cost of production and a minimum profit. If a firm is inefficient, his costs will be higher than normal and he will not make any profit--he may not even be able to cover costs. Thus, inefficient producers will either have to improve their methods or they will eventually be forced out of business.

By the same reasoning, you should see that competitive firms will be quick to copy new, more efficient methods of production, thereby temporarily increasing profits. However, because all firms will start to use the new methods, the effect on the market of the new techniques will be a lower market price.

If all dairy farmers switch to the new feed, the effect on the whole market is an increase in supply, which is shown by the increased market supply on the right-hand diagram. The increase in supply reduces price and permits people to buy more milk. The consumer is the beneficiary of the lower costs, not the farmers.

You might well ask, why does the farmer use the new feed if he doesn't benefit? The left-hand diagram in Figure 4 can answer this question. Assume that our farmer is the first to switch to the new feed. The market price is still $.50 because only one or a few farmers are using the new feed. Our farmer will now sell around 95 gallons a day at $.50, and he will make a considerable profit. However as the use of the feed catches on and more and more farmers use it, market supply will increase and the price will start to drop.

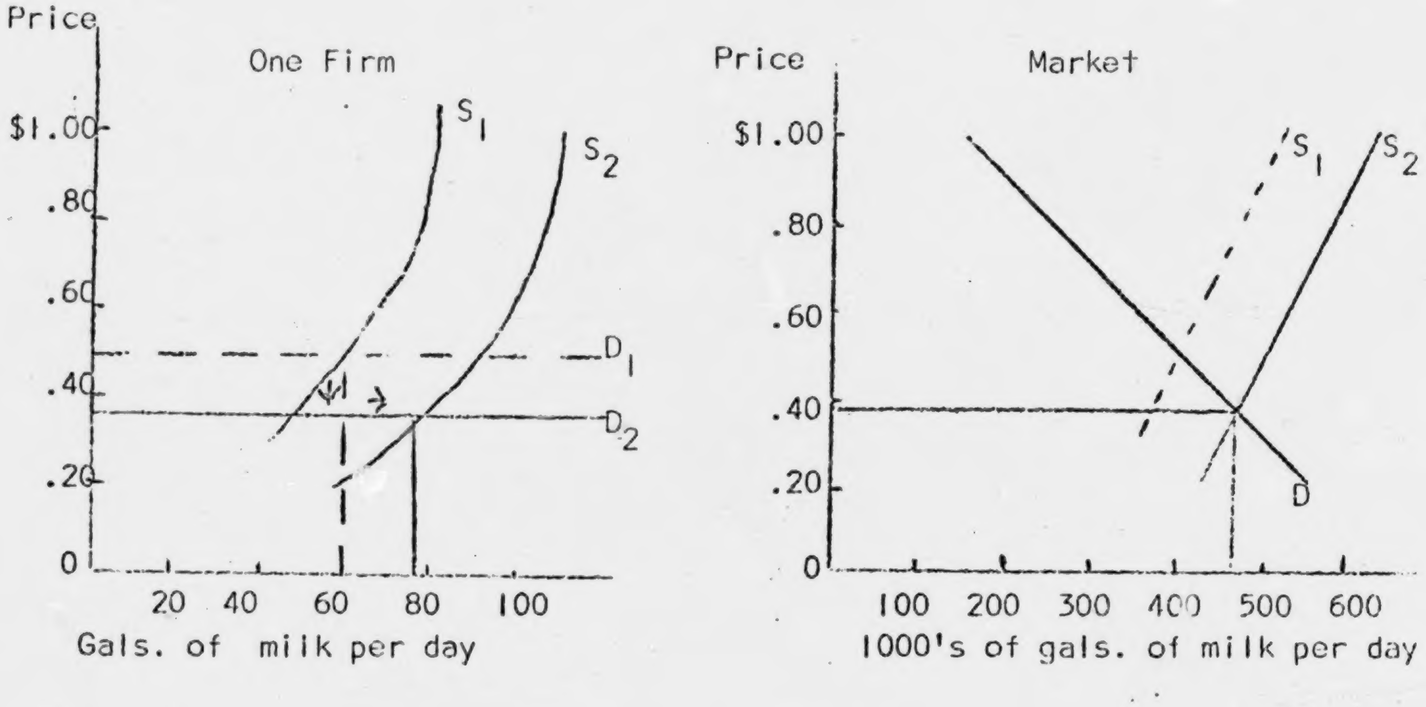


Figure 4

Effects of a Change in Supply Conditions in a Perfectly Competitive Market

Eventually, when the price drops to a little less than 40¢ a gallon, and the original farmers are no better off than they were to begin with. They had a temporary advantage which was competed away. Now, of course, all farmers must use the feed in order to make even a normal profit.

This practice of the competitive firm's adjustment to changes in supply and demand can be described as a cybernetic system which creates profits through production and sale of its output. The firm uses this information about profits to alter production decisions about how much to produce, what methods to use and whether or not to remain in business. Whenever market price or costs change, profits change and the firm adjusts immediately to these supply and demand conditions. Figure 5 shows this long-run adjustment or decision-making process of a competitive firm as a cybernetic system.

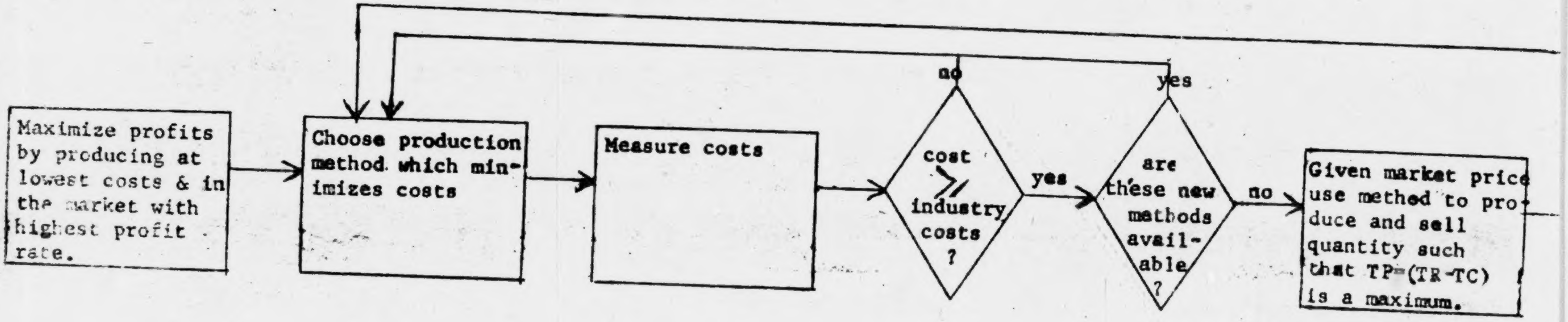
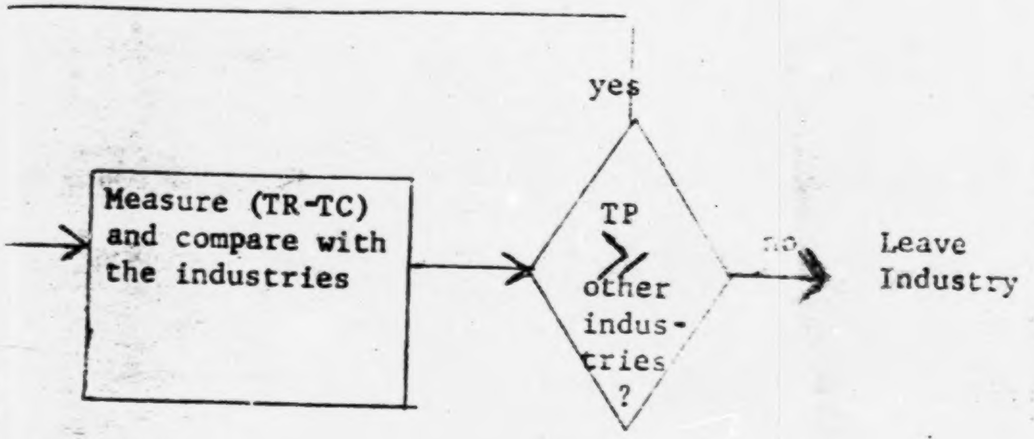

Maximize profits by producing at lowest costs & in the market with highest profit rate.
Choose production method which minimizes costs
Measure costs
cost ≥ industry costs ?
no
yes
are these new methods available ?
yes
no
Given market price use method to produce and sell quantity such that TP=(TR-TC) is a maximum.

Figure 5

A Perfectly Competitive Firm as a Cybernetic System Long-run Market Responses to Maximize Profit


Measure (TR-TC) and compare with the industries
TP ≥ other industries ?
yes
no
Leave Industry

III. CONDUCT AND PERFORMANCE IN A PERFECT MONOPOLY MARKET

Definition of Perfect Monopoly

As is the case with perfect competition, a perfect monopoly is defined by the competitive demand and supply conditions present in the market. As you can see from the comparison below, the market conditions facing the monopolist are almost the exact opposite of those facing the firm selling in a perfectly competitive market:

Conditions of Perfect Competition	Conditions of Perfect Monopoly
1. Many firms.	1. One firm.
2. Standardized, undifferentiated product.	2. Unique product for which there is no close substitute.
3. Free entry and exit into and out of the market.	3. No other firm can enter the market.
4. No seller or group of sellers can influence price by restricting or increasing output. A firm can sell all it can produce at the market price and still not affect the market price.	4. The monopolist can influence price by selling different amounts. By restricting the amount sold, the monopolist can force the price up; if the monopolist wishes to sell more he must be willing to sell at a lower price.

Figure 6 is an imaginary model of a monopoly market. The supply curve shows the amount the monopolist is willing to sell and the demand curve shows how much the monopolist can sell at each price. Under the market conditions shown, the price will be $42.00 and there will be 4000 widgets sold per week.

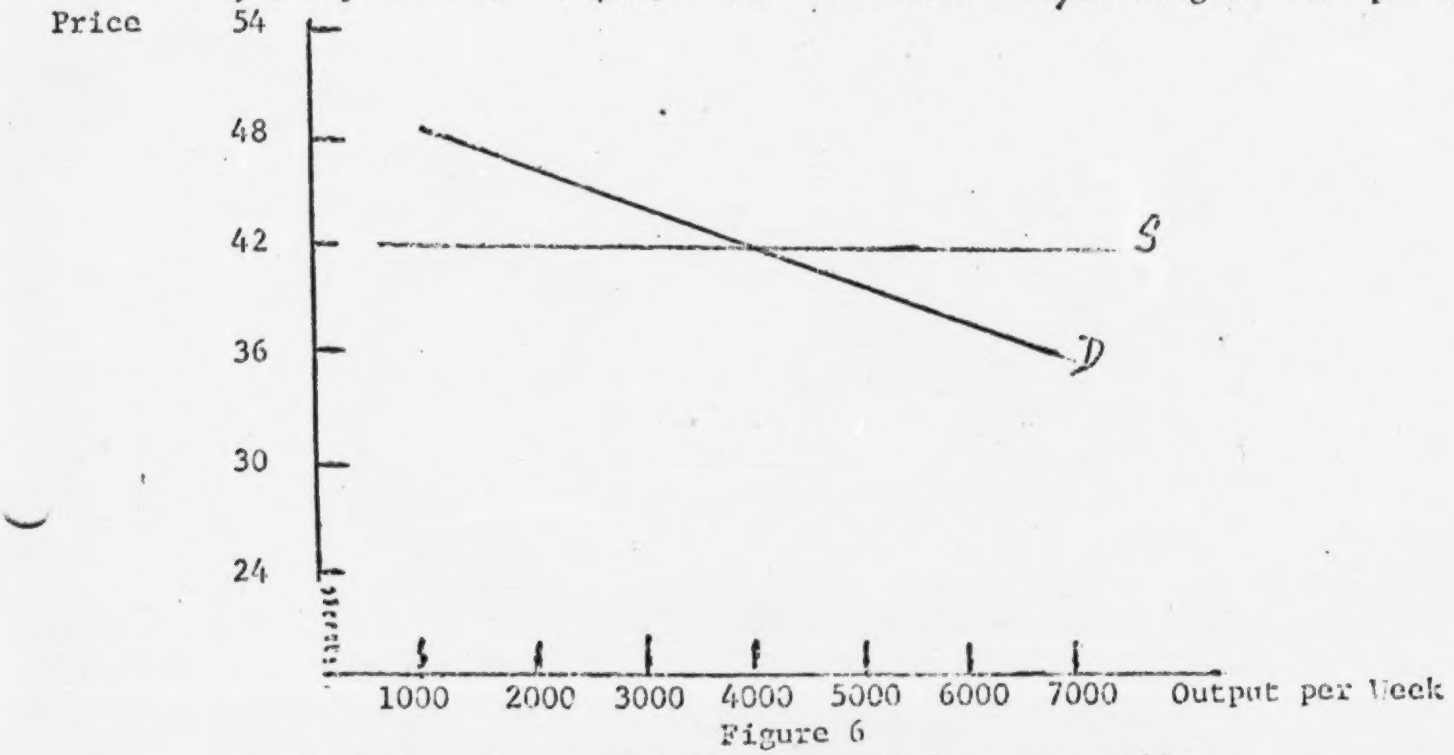


Figure 6
A Market Demand and Supply Model for a Monopolist

The diagram looks almost the same as the market model for perfect competition except that in this case the supply curve is parallel to the horizontal axis and is drawn at the market price, \$42.00. This says that no matter how much is sold the only price the seller will accept in \$42.00. The other difference between this diagram and figures 2 or 3 describing perfect competition is that there is only one diagram, whereas in the perfect competition case we showed demand and supply curves for an individual competitor as well as market demand and supply curves. The monopoly model demand and supply curves for the market and for the monopolist are the same. This is because there is only one seller; therefore the market demand and supply curves are the monopolist's supply and demand.

Price Determination

Although the monopoly market demand and supply curve model looks much the same as the market model for perfect competition, in the case of perfect monopoly the market price is not determined by competitive buying and selling. Instead, the monopolist can set the price and he can set it so as to make the highest possible total profit.

In order to set the price the monopolist must have accurate information about market demand--how much buyers will buy at different prices--and about the cost of production at different rates of output. The table below gives this information for our imaginary widget monopolist.

Table 1

Widget Monopolist's Market Demand and Supply Conditions

Supply Conditions		Demand		Total Profits	
(1) Units per week Q	(2) Total cost TC	(3) Price per unit P	(4) Units demanded per week Q	(5) Total revenue (col. 3 x col. 4) PxQ=TR	(6) Total profit= TR-TC=TP (col. 5 - col. 2)
1000	$ 14,000	$48	1000	$ 48,000	$34,000
2000	31,200	46	2000	92,000	60,800
3000	53,100	44	3000	132,000	78,900
4000	81,000	42	4000	168,000	87,000
5000	116,600	40	5000	200,000	83,400
6000	163,200	38	6000	228,000	64,800
7000	221,000	36	7000	252,000	31,000

The first two columns show how much it costs to produce different amounts of widgets per week. Notice that as output goes up by 1000 widgets per week, total costs increase faster and faster. For instance, when output is increased from 2000 to 3000 widgets, total cost goes up from $31,200 to $53,100 or by $21,900. However, when output is increased from 6000 to 7000 widgets per week, total costs increase from $163,200 to $221,000 or by $47,800. It costs more and more to produce larger amounts; this is the familiar law of diminishing marginal returns at work. These total cost figures give the options open to the monopolist with his existing plant.

Columns 3 and 4 give the market demand. From this information we can calculate the amount of total sales revenue which the monopolist would earn at different amounts sold. These figures are given in column 5. Total sales revenue equals the amount sold (the figure in column 4) times the price (the figure in column 3). Thus, when the firm sells 1000 widgets per week, it can charge $48.00 per widget and will take in $48,000. Notice that as the firm sells more units total sales go up, but that the amount increases by smaller and smaller amounts. When sales go from 1000 to 2000 units a week, revenue increases from $48,000 to $92,000 or by $44,000. When sales go from 6000 to 7000 total revenue increases from $228,000 to $252,000 or by only $24,000. Eventually total revenue may actually decline if the monopolist tries to increase quantity sold beyond a certain point. The reason for this tendency for sales volume to level off is that in order to sell more widgets, the price has to drop. Buyers will not buy more unless the price is lower; therefore the monopolist cannot sell more except at a lower price.

The exact amount the monopolist sells is affected by both sales and costs, and the last column permits us to predict the monopolist's decision. Column 6 shows total profits earned at different amounts sold. Total profits equal total revenue less total costs. In this case profits are greatest when the price is $42.00 and the firm sells 4000 widgets a week.

If the monopolist has all of this information about costs and current market demand, and assuming that the firm maximizes profits, it will set the price at $42.00. The monopoly does not have to set price directly, however, for the same effect can be achieved by restricting available supply to 4000 widgets per week, letting buyers compete with each other to determine the price. In this case the price would settle at $42.00. Either way the results are the same.

In this example, the monopolist will earn handsome profits of $87,000 per week, more than the cost of producing the widgets. This is an exaggerated example; monopoly profits may not be so spectacular. In fact, if there is not much demand for what the monopolist produces, there may be no profit at all. The significant thing to note is that if monopoly profits are high, there are no competitive market forces which will force the price down. However, in perfect competition, when firms are earning excessive profits, new firms enter the industry, increasing market supply and reducing market price, therefore profits of the sellers. No such competitive action is possible in a monopoly market because, according to the definition of monopoly, there are complete barriers to entry. It is impossible for a competitor to come into the market to increase market supply, thereby forcing the price down.

The Monopoly Market Reactions to Changing Market Demand and Supply Conditions

How does a monopolist react to a change in market demand?

Assume that the demand for widgets increases and that Table 2 provides the cost and revenue information necessary for the firm to react to this change. The table shows that the firm will increase production to 5000 widgets a week and that the price will increase to $44.00. As in the previous example, the firm can bring this about either by raising the price or by increasing output from 4000 to 5000 units per week. But, note that to take full advantage of the increase in demand the monopolist will not simply increase the quantity to 6000 units per week, the amount which buyers are now willing to purchase at $42.00. Total profits are greater when quantity sold is restricted to 5000 units and the price is increased to $44.00.

Table 2

The Widget Monopolist's Cost and Demand Data after an Increase in Demand

Supply Conditions		Market Demand		Total Profits	
(1) Output per week Q	(2) Total cost TC	(3) Widgets demanded Q	(4) Price per unit P	(5) Total revenue TR	(6) TP= TR - TC
1000	$ 14,000	1000	$52.00	$ 52,000	$ 38,000
2000	31,200	2000	50.00	100,000	68,800
3000	53,100	3000	48.00	144,000	90,900
4000	81,000	4000	46.00	184,000	103,000
5000	116,600	5000	44.00	220,000	103,400
6000	163,200	6000	42.00	252,000	88,800
7000	221,000	7000	40.00	280,000	59,000

Thus, the monopolist will restrict output in order to maximize total profits.

We can generalize from this example to predict that in a monopoly market the monopolist will react to changes in demand by increasing quantity supplied and price when demand increases, by reducing quantity supplied and price when demand decreases. The monopolist conforms to changes in consumer demand in the directions predicted in the law of supply and demand. The difference, however, between the conduct of the monopolist and that of competitive firms is that by restricting increases in quantity sold, the monopolist can make higher total profits. In addition, when demand goes up and price and profits increase, monopoly profits will remain high, whereas in a competitive market the extra profits are competed away by entry of new sellers into the market.

We can make a similar analysis of the effects of changing supply conditions. Suppose that wages increase by 15%. This increase in the cost of labor will cause total costs to increase. With these higher costs, it is likely that the level of output at which total profits are greatest will now be smaller and that the monopolist will raise the price. Without working out a specific example, you can use Table 2 to see that this is likely to be the case.

If costs decline, the monopolist will increase output and will lower price. But probably, the reduced costs will also increase total profit because the monopolist will not pass all of the reduced costs on to the consumer. And, in contrast to the case of perfect competition, the price will not be forced down to the point where all of the reduced cost will be passed on to the consumer.

Thus, as in the case of a change in demand, the law of supply and demand can be used to predict the effect of a change in market supply on price and quantity sold in a monopoly market. However, due to the fact that the monopolist is protected from competition because it is impossible for another firm to enter the market, any increase in profits will not be competed away in the long-run to insure that output is sold to the consumer at the lowest possible price.

Product Quality and Production Efficiency in a Monopoly Market

How efficient are monopolists and to what extent does a monopolist try to provide the consumer with high quality output?

From what we have said so far, it should be clear that for a business with a monopoly, profits will be higher if costs are as low as possible and if the firm tries its best to give consumers what they want by providing high quality products.

There are two reasons, however, why efficiency and quality might be lower under conditions of monopoly than under conditions of perfect competition.

First, if a monopolist is making substantial profits and if there is no real possibility that some other firm will be able to break into the market, then it is not necessary for the monopoly firm to worry constantly about reducing costs and improving quality. One effect of competition between producers is to keep producers on their toes; if firms do not introduce new known methods or improvements in the product, their profits will decline and perhaps disappear. A monopolist does not have to face such competition and therefore can be more relaxed about making improvements in production and product quality.

Second, a monopolist may well want to make the most of the potential monopoly profits, and may well use profits to invent new production techniques or improved products. Even so, the monopolist may not actually introduce these new inventions as soon as they are discovered. Rather, management may delay introducing the new technique or product if the innovation requires the firm to invest in new machinery or buildings. If there is no competition to worry about, the firm can wait to make the new improvement until the existing machinery and buildings are worn out. Why should the firm invest in new machinery when the existing machines still have plenty of life in them?

Thus, the monopolist may well spend profits inventing new products and processes, but he has some leeway in introducing these inventions and can plan investment so as to maximize profits. From one point of view this ability of a monopolist to time innovations is bad for the consumer, because consumers do not get the new product or lower costs as quickly as they would if there were more seller competition. From another point of view, one can argue that the monopolist conserves resources by planning investment more rationally and that the consumer is better off than he would be if competition forced producers to innovate constantly, thereby using up scarce resources trying to make insignificant improvements on what they produce. Why do we need a better mouse trap today? What's wrong with the old fashioned kind, or with waiting another six months for the new model, particularly if by waiting we save resources?

Competitive Limits to the Amount of Monopoly Profits

Monopolists usually cannot completely escape competition. They face competition from other industries which produce substitute products. For instance, before World War II Alcoa (Aluminum Company of America) was the sole U.S. producer of aluminum ingot, and although there was no competition in the aluminum industry, Alcoa faced competition from other primary metal producers such as copper and steel producers. For some aluminum uses where there existed substitutes, competition was severe (aluminum wire) whereas for other uses Alcoa had practically no competition (airplane production).

The amount of profits a monopolist can earn is directly affected by the extent of competition from other markets. This outside competition shows up in the market demand. If there are close substitutes for what the monopolist sells, then market demand will be fairly elastic in the usual price range. Because copper wire is a substitute for aluminum wire, the market demand for aluminum wire will be elastic. A small percentage change in price will bring about a larger percentage change in quantity sold. The monopolist cannot raise price much without a significant drop in the amount of wire sold.

If the monopolist's market demand is elastic, the monopolist cannot raise price significantly by restricting sales; therefore monopoly profits will not be too high. If market demand is inelastic by restricting the amount available for sale the monopoly will force price up quite a bit, thus increasing profits.

For instance, a lone gas station in an isolated community can raise gas prices way above the prices charged in a large town where there are many gas stations and still not curtail the amount of gas sold by very much. Assuming there is enough gas business in town, the gas station manager can increase his profits significantly by raising the price of gas. (In this case, there is another limit to profits because another person could go into business pretty easily if it were possible to make considerable profits.)

Generally speaking the more elastic demand, the lower the monopoly profits--there is not much difference between the product price and the cost per unit to produce the product. The less elastic the market demand, the higher the monopoly profits--there is a fairly large margin of profit between the price and the per unit cost of production. The desert gas station proprietor can charge 10¢ a gallon above cost per gallon (after allowing for all costs) and make a handsome profit. However, the town grocer, who is also a monopolist, can only mark prices slightly higher than city prices because people will drive into the city to shop if his prices get too far out of line.

Monopoly Price Discrimination. Monopolists can sometimes increase profits if they can effectively divide up buyers according to the buyers' demand elasticity for the product. The monopolist can then charge some buyers a higher price than others, thereby increasing total profits more than would be possible if only one price were charged. This practice of charging different buyers different prices for the same product is called PRICE DISCRIMINATION.

Often a monopolist can use price discrimination because different buyers buy slightly different products. For instance, in the case of Alcoa, electronics firms buy aluminum wire while airplane manufacturers buy aluminum sheet. If the price of aluminum wire per pound is cheaper than the price of a pound of aluminum sheet, it doesn't do the plane manufacturer much good.

In this case a the price difference between aluminum wire and sheet aluminum would be considered an example of price discrimination if the mark-up above costs is higher. If it costs more to produce sheet aluminum than aluminum wire a price difference equal to the difference in cost could be legitimate.

From the earlier discussion about price elasticity you should see that if a monopolist firm can use price discrimination, it will use a higher mark-up on the goods sold to the buyers with the less elastic demand. In the case of aluminum demand for aluminum sheet by airplane manufacturers was relatively inelastic, because aluminum was the cheapest light metal available. Therefore, the mark-up could be substantial. For aluminum wire, where there were other cheap substitutes, the mark-up could be considerably less.

Summary

Now we can briefly restate and answer the questions posed at the beginning of the chapter to summarize the major tendencies of monopoly market conduct and performance:

1. How is price determined?

   The monopoly sets price directly, or indirectly through restricting supply, at a price which will bring the highest total profit. In order to maximize profits the monopolist must know what the market demand for the product is. Then given this information and information about costs of production at different output levels, the firm can set the price to maximize profits. The difference between the pure monopolist and the pure competitor is that because the monopolist supplies the total market, by choosing how much to sell, the monopolist also chooses the price. This is because the buyers purchase less output at higher prices. To keep the price high, the monopolist has only to restrict the amount available to the quantity people will buy at the desired price.

2. When do prices change?

   Prices change in response to changes in demand or supply conditions in the directions predicted by the law of supply and demand. However, prices do not change in response to entry or exit of competitiors. Because there are no competitors in the market and there is no possibility of entry, if the monopolist is earning excessive profits, new producers cannot enter to increase market supply and to reduce price and excess profits.

3. How motivated is the monopolist to cut costs and improve the quality of the product?

The monopolist will try to produce efficiently and to provide customers with high quality if he is interested in maximizing profits. However, there is no real criterion to use to determine whether or not the monopoly is using the latest or best production methods and producing the best products because there are no competiting procedures with whom to compare the monopolist. Furthermore, a monopolist has more choice about when to introduce a new product or to convert production to a more productive method. He can wait until existing plant and equipment are worn out or at least until the investment costs have been recovered. In short, there are no market competitive pressures to force the established monopolist to maximize efficiency or to innovate continually to improve the quality of the goods or services. The monopoly _may_ be progressive or innovative, but it does not _have_ to be to survive.

4. How efficiently are resources allocated? From the foregoing analysis it should be clear that price is higher and output is less per day than it would be if the monopolist operated at the same scale of production but in a competitive market. The monopolist restricts output in order to sell at a higher price and at higher total profit. In addition, the absence of competitive pressures means that there are no cost or quality standards set by the market to which the producer must conform; therefore, costs can be higher than they might be if the producer had some competition.

¶ Monopoly markets do not operate to make consumers sovereign--to produce what buyers want at the lowest possible cost and price. Nevertheless, consumers have an effect on monopoly pricing and output decisions. Consumer demand is directly related to the price elasticity of demand for the product. If the product has high elasticity, this means that there is competition from some other industry, and the firm will respond quickly and significantly to changes in demand by lowering the price and/or by making improvements in the product or in production techniques. If the product has a lower demand elasticity, the firm can respond much more slowly to changes in market conditions.

5. Does a monopolistic market operate like a cybernetic system? One could think of a monopoly as a cybernetic system to maximize profits or to attain some measurable criteria of success, then construct a model describing how the management could behave to achieve this goal. However, in a monopoly market there is no mechanical and automatic market mechanism--competiton--which forces the monopolist to adjust to consumer demand to provide what consumers want at the lowest possible cost. The monopoly might be a cybernetic system to maximize profits, but doesn't have to be. There are no competitive pressures which require the monopoly to minimize costs and which force the price down to this minimum cost. The great virtue of a purely competitive market economy is that the invisible hand of the market operates to protect the consumer, and to make him king of the economy. This invisible hand is producer and consumer competition and there is no escaping it for the pure competitor. On the other hand, in a pure monopoly market, there is no direct competition--no invisible hand. The buyer beware!

CHAPTER 13

THE ORGANIZATION OF IMPERFECTLY COMPETITIVE MARKETS

I. Introduction

In this and the following chapter we study industry organization, the field of economics which applies and extends market theory to the empirical study of U.S. industries.

In previous chapters we derived the competitive conduct and long-run performance of pure competition and pure monopoly from our assumptions about the market's structure--its supply and demand conditions. This analysis should have given you some insights into the mechanics of how a market system allocates resources. However, we cannot draw conclusions about U.S. market operation from the analysis of pure markets alone, because the conditions of pure competition and pure monopoly do not exist in many U.S. markets today. Most markets are imperfectly competitive--market structure (the demand and supply conditions) lies somewhere between the two extremes.

The objective of industrial organization studies is to learn how markets actually operate and to reach general conclusions (theories) which permit us to predict conduct and performance in markets which are imperfectly competitive. Just as is the case in the pure models, you will find that the success of an industry in turning in a good performance for owners or for the public depends on the structural characteristics of the industry--the number of firms and the relative market power of the largest ones, the ability of new firms to enter the market, the nature of the good or service sold, the type of buyers, the rate of growth in market demand.

One can judge an industry's performance from the point of view of the market sellers who want to maximize their profits, or from the point of view of the public. The basis of judging an industry's service to the general public is how industry action promotes the economic goals of our society, namely, freedom, justice, progress, stability and security. In general, as you might expect from what you already know about the pure markets, the more market structure resembles monopoly the less well these goals are achieved from the point of view of the general public. One important purpose in undertaking industrial organization studies is to determine the extent of competition and monopoly in our market system and the effect of this existing market structure on the quality of American economic life. Answers to these questions are crucial to public policy considerations about the need for government control over business activity.

Indeed one's views of how just, free, progressive, stable our economy is and how great is the need for government controls over business depend on conclusions about the prevailing market organization of U.S. industry. For instance, conservatives favor reducinggovernment controls over business because they are convinced that competitive markets allocate resources to satisfy consumer demand, that government interference in markets reduces efficiency and that competitive markets predominate in the U.S. market system. Liberals, who favor using government controls over markets, also believe that competitive markets are good allocators, but they are convinced that most important markets in the U.S. are dominated by a few large firms and that, by and large, government operates to promote the public welfare. Those on the radical left advocate a complete restructuring of the economy on the grounds that American industry is dominated by big business which, in turn, is controlled by a ruling class of managers and major stockholders, and that government intervention cannot effectively protect the public because the ruling class leaders gain control over the government regulators.

Industry organization affects the achievement of all five basic economic goals to some degree, but the greatest impact is on progress and stability. An economy which is stable and progressive maintains a steady rate of growth, full-employment of its manpower and capital rescurces, price stability and a continued improvement in the satisfaction of its population's wants. To achieve these goals, industries must be efficient; they must notemploy too many or too few resources. This requires firms to produce at low costs--to operate at full capacity, conserve raw materials and manpower, choose the most efficient mode of production. They should also be progressive--they should invest in efficient human and capital resources, raise the quality and variety of goods and services available for consumption and improve the technology of production. Finally, markets should operate so that prices are flexible--so that changes in consumer demand or supply conditions cause prices to change, thereby causing resources to move in and out of markets. When demand drops, workers and capital should leave the industry and enter other markets where demand is increasing. Because price flexibility helps to maintain full employment of the nation's resources without inflation, market competition which contributes to flexible prices also contributes to the over-all goal of stability.

The study of industry organization necessarily culminates in an examination of our public policy related to industry regulation and control. What controls exist? Are they necessary? Do they work to enable and encourage businesses to conduct their affairs so as to perform well from the public's point of view? Are the policies self-consistent, do they need to be changed? Would the proposed changes be any more effective?

Before we can turn to the heady subject of public policy, however, it is necessary to get some background experience studying U.S. market operation. This chapter introduces the terminology of industry organization which will permit you to study actual industries. In particular, we will (1) describe how businesses are classified into industries; (2) define and illustrate the major market structure characteristics which permit us to differentiate between different kinds of markets; (3) give a system for classifying markets according to the degree of market competition; (4) define and illustrate the major classes of competitive conduct between businesses; and (5) give the long-run performance characteristics which describe the extent to which industry conduct promotes progress and stability.

II. Defining an Industry

An industry is a group of firms which compete to sell the same or a similar good or service. Here 'compete' is the crucial word; business firms are in the same industry if they compete in the same market--if they are highly sensitive to each others' market behavior but are not sensitive to the behavior of firms in another industry. If firms are correctly classified together as one industry, then each firm in the industry is affected by pricing, advertising, packaging, product changes of other firms in the same industry, but relatively unaffected by the same kinds of behavior of firms outside their industry.

An industry is defined in terms of the market for the good or service of that industry. In this sense, the terms industry and market are used interchangeably. The automobile industry can be referred to as the automobile market and when we speak of industry structure or market structure, we mean the same thing--the characteristics of the firms which supply a particular market.

It is easy to define a market or industry when we are studying a model market, because we create the market by setting up our assumptions about the kinds of businesses in the market. Unfortunately, for at least three reasons it is not easy to divide up real businesses into distinct industries (markets).

First, in pure competiton and pure monopoly models we can set up the model so that each good or service is distinct, really different from every other one, and we can assume that each is sold in a different market. However, when it comes to identifying real markets, we find that firms in the same industry often do not sell exactly identical goods or services. Each toothpaste manufacturer sells a slightly different product. The toothpaste smells or tastes or looks different, it is packaged differently, it has a different brand name, different advertising is used to sell it. Yet all toothpaste producers are obviously competing in the same market. These differences in the product are even more apparent when the thing sold is a service. Each record store provides slightly different services in selling records. The choice of records may be different, the sales people are different, the location is different, each store has slightly different rules about selling on credit or accepting checks, etc. Even gas stations which seem to provide identical services (down to clean restrooms) do not, mainly because they are more-or-less conveniently located when you need gas. As soon as we recognize that firms in the same market sell similar but not always identical goods and services, we are faced with the problem of defining how similar products must be to be classified in the same market or industry. We will refer to this as establishing horizontal industry boundaries, defining how close a substitute products in the same industry are for each other.

A second problem is to establish vertical industry boundaries. Because of specialization, many products are parts of finished goods or are materials which go into the production of finished goods. Inputs go through several stages of production before a final output--a car, a pair of shoes, a lathe--is produced. Even though the output of each stage may be sold in a separate market, often there are vertically integrated firms which produce and sell in each of these markets. For example, the large steel firms are vertically integrated; they sell steel at all stages of production from ingots to finished steel prepared to exact customer specifications. In addition, they may own iron mines, coal mines and transportation facilities for hauling materials and finished output. The larger producers like U.S. Steel compete in almost all of these marekts, while smaller, "independent" steel companies may sell in only one or two markets. The question to settle in deciding on vertical industry boundaries is how many stages of production should be included in one market or industry. If the stages are separated into different industries, then the sales of large, integrated frims like U.S. Steel have to be split up somehow.

Finally, geographic boundaries define an industry. This was discussed in Chapter 8 when we defined markets and distinguished between local, regional and national markets. The geographic boundary of a market is the area containing most competing buyers and sellers. For many reasons, competition may be limited to local or regional areas. For instance, some products are expensive to transport, relative to their cost of production. This high transportation cost permits local producers to sell the product for a lower price than more distant producers. Beer and cement are both sold in regional markets for this reason. In the case of beer, national brands such as Schlitz and Budweiser compete in regional markets with local brands such as Reingold in New York and Lucky in California. Another example of regional markets are the radio and television industries where technical transmitting limitations and state laws have created local stations which can affiliate with ABC, CBS and NBC. The local stations compete with each other for listeners, as do the national broadcasters.

To summarize, there are three kinds of boundary problems in setting up rules to define industries and to classify firms into these industries: first, the need to establish horizontal limits which define how close substitutes goods or services must be to be classified in the same industry; second, the need to set vertical limits on the number of stages of production of one kind of product to include as one industry; and third, the geographic limits to use in defining markets. For purposes of empirical investigation, manufacturing industries are usually defined using the Standard Industry Classification System developed by experts in government and business. It divides firms into major manufacturing industries (twenty) which are then subdivided into more narrowly defined industries, each of which are further redefined into even more narrowly defined industry classes. In all, there are seven levels or gradations of industry classifications. This permits the researcher to study very broadly or very narrowly defined industries, depending on the purpose of the study. In this course, we will stick to broadly defined industries like aluminum and car manufacture. Each of these industries includes several subindustries or markets--all tied together because they produce at some stage of production of the final product or because they produce substitute products (different kinds of motor vehicles or aluminum products).

III. Industry or Market Structure

The structure of an industry (or market) refers to the supply and demand conditions in the industry, the characteristics which describe industry organization and competitive conditions. The most important categories used to describe an industry's structure are: (1) market concentration, (2) barriers to entry, (3) product differentiation, (4) price elasticity of demand, (5) growth rate of demand for the industry products. The first two describe basic industry supply conditions and the last three are demand conditions.

An industry's structure (the above conditions) change gradually over time with changing consumer tastes, industry technology and market strength of individual competitors. Because they describe the competitive environment in which business executives operate in making pricing, production and sales decisions, information about these characteristics will permit us to predict the competitive conduct of firms in an industry.

Market Concentration

Market concentration describes the relative size of the largest sellers in a market. Industry concentration is measured by calculating the percentage of total industry sales or employment made by the largest firms. These concentration ratios are usually given for the four largest, the eight largest and the twenty largest firms--that is, the percentage of sales of the industry product which is controlled by the largest four firms, the largest eight firms and the largest twenty firms. Using any one of these, a monopoly would have a concentration ratio of 100% because one firm has all of the sales, whereas even the largest twenty firms in a purely competitive industry would account for less than 1% of industry sales.

Economists categorize industries according to the degree of concentration, as measured by concentration ratios, ranging from pure monopoly with concentration ratios of 100%, through various kinds of imperfect competition with ratios less than 100%, to pure competition where the concentration ratio is almost zero. Table I gives concentration ratios of selected industries for 1958.

Concentration ratios give only a gross (and sometimes inaccurate) general measure of the relative power of the large firms in any industry; they do not tell the whole story of industry concentration. Even with industries with identical concentration ratios there can be great differences. For example, Industry A and Industry B might both have concentration ratios for the largest firms of 80%. In Industry A, the four largest firms each control 20% of sales, while in Industry B, the largest firm has 65% of the market and the other three have 5% each. In Industry B, the number one firm dominates the industry, while in the first industry four firms dominate the industry. Competitive behavior of the firms will be quite different as a result.

TABLE I

Percent of Shipments Accounted for by Large Manufacturing Companies
Selected Industries, 1955

Industry	Number of Companies	Value of Shipments		
		Total (mil dol)	percent made by--	
			4 largest companies	8 largest companies
Motor Vehicles and Parts	989	6,419	75	81
Blast Furnaces and Steel Mills	148	5,980	53	70
Fluid Milk	5,008	5,802	23	29
Newspapers	7,947	3,616	17	24
Aircraft	113	3,376	59	83
Sawmills and Planing Mills	15,731	3,158	8	12
Radios and Related Products	1,797	2,553	27	38
Tires and Inner Tubes	38	2,272	74	88
Cigarettes	12	2,159	79	99+
Beer and Ale	211	1,980	28	44
Flour and Meal	703	1,970	38	51
Paints and Varnishes	1,428	1,736	25	36
Meat Packing Plants	2,646	1,677	34	46
Tractors	109	1,576	69	90
Bottled Soft Drinks	3,989	1,435	11	15
Motors and Generators	317	1,360	47	56
Aluminum Rolling and Drawing	139	1,347	78	85
Electrical Control Apparatus	508	1,337	49	65
Wood Furniture, Not Upholstered	2,742	1,311	9	13
Men's and Boys' Suits and Coats	1,275	1,261	11	19

Source: Department of Commerce, Bureau of the Census

Furthermore, because of difficulties in defining the boundaries of an industry, concentration ratios do not always give an accurate description of the relative importance in the market of the largest firms. Usually, concentration ratios are calculated from estimates of the market value of shipments of firms classified in that industry for the whole country. If the product is sold primarily in local or regional markets, there may be only a few firms selling the industry output in one region, but hundreds of producers in the nation, each contributing a small proportion of national sales. In such a case national concentration ratios would show that the largest firms account for a small percent of total shipments, suggesting much less concentration than actually exists in the local or regional markets.

Despite the problems of measuring concentration, it is a very important industry characteristic and the industry researcher must try to get an accurate picture of the relative importance of the firms competing in the industry. The higher the concentration in an industry, the greater is the possibility that the industry will be able to maintain high enough prices to produce excess profits for the firms in the industry. Higher than normal profits for a whole industry indicate that too few resources are flowing into the industry and that prices are inflexible.

Barriers to Entry

By barriers to entry we mean any industry supply or demand condition which makes it difficult for new firms to enter into market competition with the firms already in the industry. While measures of concentration indicate the current strength of the largest firms in an industry, the extent and effectiveness of barriers to entry indicate the probable success of these firms in maintaining their current market position. There are five general kinds of barriers to entry; the first four are supply conditions, the last is a demand condition: (1) existence of economies of scale; (2) high capital requirements for entering and remaining in the industry; (3) existing firms' absolute cost advantages because of their control over essential resources, manpower and know-how, or production methods; (4) laws which bar or limit competitors from entering the industry; (5) ability to differentiate the product.

Economies of scale. There are economies of scale when the most efficient size production operation is very large. Here 'scale' refers to the size of the factory or store or construction firm or mining company. Economies of scale means that there is lower production cost per unit with a large scale production operation than with smaller scale operation. It would probably cost several thousand dollars for a small body shop to buy and assemble all the parts to produce a new Ford, but Ford Motor Company mass produces cars so that the dealer can sell some models for less than $3000. The optimum sized automobile assembly plant requires a production level between 300,000 to 600,000 cars per year--approximately 3 to 6% of 1965 output. One factory can produce most of the motor blocks needed for one automobile company.

There are economies of scale in nonmanufacturing industries as well. Large grocery store chains have an advantage over smaller competitors because they can buy much larger quantities and receive a discount. Large trucking firms can afford to operate warehouses because of the volume of their business. Large banks have enough depositors and borrowers to permit them to use computer equipment to reduce the accounting costs of running a bank.

Capital requirements for entering and staying in business. In industries where there are economies of scale, going into business requires enormous amounts of capital, including large amounts of money to meet losses which will probably be incurred during the first years when the firm is establishing itself. Once in business there are large capital requirements for expansion of production facilities, for research and development, for advertising campaigns, etc.

To use the aluminum industry as an example this time, in the 1950's a new aluminum producer, Ormet, was organized to produce at the first three stages of production of aluminum (bauxite mining, bauxite refining into alumina, reduction of alumina into aluminum ingots). Ormet's integrated facilities for stages one to three was reported to cost $224 million; in addition, they required $17.5 million in working capital. To finance the project, Ormet borrowed $100 million from ten banks and sold another $100 million of bonds to a group of investors. Olin Mathieson Chemical Corporation and Revere Copper and Brass, Inc., the founder and joint owners of the new company, provided the remaining financing.

Absolute cost advantages of existing firms. A firm has an absolute cost advantage over another firm if its cost per unit of output is lower than a competitor's, even when both firms operate at the same scale of production. In this case, economies of scale do not explain the lower cost per unit. Absolute cost advantages exist when a firm controls essential or superior resources or processes used in production. This could include control over raw materials, skilled labor, talented engineers, managers, patent rights to some important production process or kind of capital equipment. Any of these conditions help create cost disadvantages for new firms, because they must pay higher prices for resources, or get along with more inferior inputs or production processes.

Up to World War II Aluminum Company of America (Alcoa) had a virtual monopoly due partly to Alcoa's success in gaining rights over important patents on aluminum production, which increased rival costs because they must buy royalties for the right to use the processes. In addition, Alcoa gained control of two important resources--bauxite and electric power. Although bauxite can be found almost anywhere, rich deposits do not occur everywhere, and the ore is heavy, therefore costly to transport any distance. Bauxite must be refined into alumina, then the alumina powder is turned into aluminum metal through an electrolytic process requiring huge amounts of electricity. In the early part of this century the electricity was generated in privately constructed hydroelectric plants--plants which had to be located where the water power was and at private expense. Alcoa bought up most of the bauxite deposits and water power sites which were near each other, thereby assuring herself the cheapest supply of two basic inputs in the production process.

Laws restricting entry into an industry. Government action can protect firms in an industry from further competition, or can restrict the number of competitors which enter the industry. To protect the interests of inventors who often invest much time and money to create a new product or process, the government grants patents which prohibit others from reproducing the product or using the process without the permission of the patent owner. Patents have a seventeen year life and can be renewed for an additional seventeen years; however, they rarely give the owners protection for thirty-four years. If a new invention is profitable, it is often possible to figure out how to copy and change it enough to get around the patents. Nevertheless, patents afford some protection from competition.

Another form of government protection is licensing and permit laws. Lawyers, doctors, public accountants, electricians, insurance brokers, real estate brokers, engineers, etc., cannot practice their profession or occupation without a license. Licensing often requires the person to meet certain training and experience standards, and entry of new businesses is restricted by government laws requiring new businesses to have a license to operate. Bars and restaurants in most states cannot sell liquor without a license and, in addition, the state limits the number of licenses. New airlines and trucking firms operating between states must be licensed by the Federal Government. In most industries providing public utilities (electric and gas power, water, telephones), firms cannot start in business without government sanction. Tariffs, excise taxes on imported goods, are another kind of government restriction of competition. In this case, American consumers pay a tax on imported goods which will raise import prices relative to prices of the domestic good.

Ability to differentiate the product. By product differentiation we mean the ability of a seller to convince his customers that the company's product or service is different from that supplied by competing companies. Soap, razor blades, toothpaste, washing machines, automobiles--almost any consumer good or service--are differentiated products. It is important to emphasize that the term differentiation does not necessarily refer to the physical characteristics of the products, since they may be practically indistinguishable. (Try the blindfold test on five brands of powdered coffee, or three brands of stainless steel razor blades, or Post versus Kellogg corn flakes, and see for yourself if you can find real physical differences.) Differentiation refers to anything which convinces the buyer that there is a difference between competing goods or services: advertising, packaging, style differences, differences in quality, different brand names, differences in servicing, etc.

In industries where product differentiation is possible, each business necessarily tries to convince buyers that its product or service is different, and, of course, superior to that of competitors. The higher the degree of consumer loyalty to a firm's product--the extent to which people would rather fight than switch to a new brand--the harder it is for a new firm to enter into competition with the older firms. The new cigarette manufacturer must win over customers from the older competitors. This may be possible, but it will certainly mean heavy advertising and selling expenses, or it may require the new firm to offer the product for sale at a much lower than usual price. Anyway you look at it, the new firm will probably be at a disadvantage.

Product Differentiation as a Major Market Structure Characteristic

Not all products can be differentiated; some businesses sell essentially standardized products--something like wheat, bricks, steel ingots, pipe, heavy machinery built to exact specification. These goods are seen by buyers as 'standardized.' Thy buyers don't see any difference between one seller's product and another's; advertising and brand names won't even convince them of a difference. Standardized products are usually agricultural commodities, minerals, construction materials, machinery, semifinished products. Whereas differentiated products are often consumer goods, standardized products are usually bought by producers to be used in some further production process. Businessmen are interested in the actual physical characteristics of the good and, therefore, they are not affected by advertising, packaging, etc.

This quality of the good or service, whether or not it is standardized or differentiated, is a very important demand condition; it is a characteristic of the market which profoundly affects competitive behavior of firms in the industry. If it is possible to differentiate the product, then the business will find it profitable or necessary to engage in advertising, to constantly improve or change the looks or quality of the product, to provide various new services to customers, etc. We will see later that we can categorize markets according to this demand characteristic.

Price Elasticity of Demand

As you know, price elasticity of demand measures how responsive buyers are to changes in price. If small percentage changes in price cause large percentage changes in the amount of the product which is sold, then demand is elastic. If buyers are relatively unresponsive to price changes, then demand is inelastic.

High price elasticity is generally found in markets where the product price is significantly high for the buyer to take buying the product seriously, where the product has close substitutes and where it is a luxury. Building materials demand is price elastic. A builder can choose from several varieties of roofing--shingles, shakes, composition slate, tile, etc. Window frames can be made of wood, steel, aluminum, and the interior walls can be finished with lath and plaster, plaster board or synthetic panelling, etc. Each of these products must be competitively priced; firms producing for these markets cannot quote prices which are out of line.

A basic industrial product like steel has a low price elasticity of demand. It is a necessary ingredient in an enoumous variety of manufactured articles, and the steel component of most manufactured products represents a small portion of the cost of the product. For example, there is only about $160 worth of steel in an automobile and this represents about 6% of the total cost. Furthermore, because the price of steel is low compared with substitutes, there is very little substitution of other materials for many steel uses.

In general, price elasticity is related to the extent of price competition. Elastic demand means that there are close substitutes, which means that the firms in the industry can increase sales considerably by a small price drop. For instance, aluminum manufacturers may be able to draw customers away from copper wire by reducing the price of aluminum wire slightly. Then, within an industry, each firm produces a product which is a very close substitute for or identical to that produced by other firms in that industry. Therefore, each competitor in an industry has a very elastic demand curve. If one producer in an industry reduces price, that firm can capture customers from other firms in the same industry. Whether or not price competition is advisable depends on other market characteristics which we will study later. Here it is enough to see that the effectiveness of raising or lowering prices depends on both market price elasticity and the price elasticity of demand of the firm's own portion of the market.

The Rate of Growth of Demand

How fast sales are expanding from year to year is another important market structural characteristic which affects competitive behavior in the industry. Young industries generally grow fast, often at the expense of older industries. The airlines have taken passenger business away from the railroads; the trucking industry has taken cargo business away from them. Compared to older industries, the younger growing industries often are less troubled by changes in general business conditions; thus they have the advantage of more rapid growth and greater stability in sales from year to year.

As is the case with price elasticity of demand, growth rate in demand for an industry's product effects both competition between firms in the industry and competition with other industries. For instance, firms in fast growing industries are likely to be aggressive competitors with firms in other industries and they may or may not compete actively with each other for the new business. Firms in the industry may all lower prices or offer other inducements to get business away from another industry. Or, as was the case in the automobile industry, by introducing more and more efficient assembly procedures the whole industry may be able to lower the price so that the general public falls in love with the new product. Competition in the auto industry changed radically around 1925 because by that time most families owned a car; after 1925 auto manufacturers were competing with each other for a much lower growing market.

Summary

The market structure characteristics described above describe the major supply and demand conditions which determine competitive conduct of the firms in an industry. The most general measure of the degree of competition in an industry is industry concentration, the relative size of the largest firms in the industry. You will find that, in general, high concentration means high profit. The other elements of market structure which influence conduct and performance are:

Barriers to entry - the characteristics of a market which make it difficult for new firms to enter the industry

Product differentiation - the ability of firms in an industry to make a standard product desirable to consumers and, in so doing, gain customer loyalty to the product

Demand elasticity - the degree of customer response to a product when the price changes. If a small change in price leads to a large change in the amount sold, the product has an elastic demand. If there is little change in demand when the price changes, the product has an inelastic demand.

Growth rate of demand - the rate at which demand for an industry's product grows. The conduct of firms in an industry will be influenced by whether the growth rate of demand for the product is high or low.

IV. Classifying Markets According to the Degree and Type of Competition

We will classify industries into five types of industries, categorized according to the degree and kind of market competition. Ranked by degree of competition, these market types are: pure competition, monopolistic competition, type I oligopoly, type 2 oligopoly, pure monopoly. The three market types between pure monopoly and pure competition are all examples of imperfect competition and these are the categories into which virtually all industries fall.

The three market structure characteristics--degree of market concentration, the effectiveness of barriers to entry and the possibilities for product differentiation--are used to classify industries into the five markets. Generally speaking, the greater the degree of concentration, the more effective the barriers to entry, the greater the extent of product differentiation, the greater the market power of the dominant firms in the industry. Table 2 describes this ranking, the relation of the three imperfectly competitive market types to the pure forms. The industries are listed in column I from most to least competitive. Note that as concentration, barriers to entry and product differentiation approach the conditions existing in a pure monopoly, the markets become less competitive. This table is a useful device for learning and distinguishing between the different kinds of markets.

Monopolistic Competition

The great majority of highly competitive markets in this country--local service markets, the professions, many highly competitive manufacturing industries like clothing manufacture, some mining industries--are considered to be examples of monopolistic competition. This is the market type which most closely approximates the conditions of pure competition. The important difference between pure competition and monopolistic competition is that in monopolistic competition the sellers sell a differentiated product. Although there may be hundreds of restaurants in a large city, maybe a thousand in a fifty mile radius of the city, each restaurant has its own special thing. It may be location, food specialties, decor, entertainment, the owner's personal warmth, cleanliness, etc. But each restaurant is different. These differences, however small, give the business management a little bit of protection from competitors, a little bit of control over price. The restaurant owner faces very stiff competition, but he can raise or lower prices a bit, he can try to get more control by figuring out new ways to make his business more unique.

The possibility of product differentiation is a tiny step toward making the product unique. It is, in other words, a step toward building a characteristic of monopoly. It does not in fact create a monopoly. It simply moves the type of market a little away from the pure competition model and a little toward pure monopoly. Not surprisingly, a market that has most of the characteristics of competition plus some overtones of monopoly is given a name that is a combina-

TABLE 2

Types of Competitive Markets

The Relation of Concentration, Barrier to Entry and Product Differentiation
to
the Degree of Market Competition

Type of Market	Market Structure Characteristics		
	Concentration	Barrier to Entry	Product Differentiation
Pure Competition	none	none	none
Monopolistic Competition	low	low	some
Type I Oligopoly	high	high	none
Type 2 Oligopoly	high	high	some
Pure Monopoly	complete	complete	complete

tion of the two--monopolistic competition. Note that competition is the noun and monopolistic is the adjective which modifies the noun. That's exactly the way it is. Monopolistic competition has a lot of the qualities of competition and a little of the qualities of monopoly.

Oligopoly Markets

As you may have guessed, the characteristics of monopolistic competition can be found in a great many combinations of market characteristics. This is a very flexible category and it includes the majority of the nation's five million different businesses. However, there are two other types of markets, rather similar to each other, much smaller in the total number of businesses included, but very important in the nation's economy because they represent a large percentage of sales. We call these oligopoly markets.

Monopoly comes from two Greek words, monos meaning "alone" and polein meaning "to sell." Oligopoly is also from the Greek,but oligo means "a few." In an oligopoly market a few firms have control of selling. Oligopoly markets can take many forms. A market with two sellers is an oligopoly market, as is a market with ten. An oligopoly market may be dominated by one or two large sellers who account for more than 50 or 60% of sales, or several firms can share the market more or less equally. There may even be hundreds of sellers in an oligopoly; however, in this case one or a few of the large firms must dominate the market.

Competition takes a much different form when none or a few big firms account for most of the market sales, mainly because these firms cannot take action without affecting sales of their competitors. For instance, suppose a market has five competitors and that one of these sellers reduces price by about 10%. Assuming that the firms all sell a product which is fairly similar, customers will buy the cheaper product, the other firms will notice a decline in their sales and will react, probably by reducing their price. On the other hand, in a highly competitive market with many small sellers, a lower price of one firm will not have a noticeable effect on sales of the other firms. If one of 500 equally small firms reduces price it will get business away from competitors, but since there are so many of them, the other firms will not even notice that they are selling less.

To summarize, an oligopoly market is one in which a few firms dominate the market, few enough so that competitive action by one of the major firms will immediately and noticably affect sales of competing firms.

We can distinguish between two kinds of oligopoly markets. We will call them simply type I and type 2 oligopolies. A type I oligopoly market is one in which the sellers sell a standardized product. A type 2 oligopoly market is one in which the firms sell a differentiated product. Steel and aluminum manufacturing industries are oligopolies producing a standardized product; therefore they are type I oligopolies. On the other hand automobiles, cigarettes, soap, liquor, appliances are sold in a type 2 oligopoly market because the product is differentiated. You will see later that the form of competition between oligopolists depends to a large extent on whether or hot the product sold can be differentiated; this is the reason we make the distinction.

V. Market Conduct

Market conduct refers to how firms compete--how, when and why firms decide to change prices, level of output, the quality of its product, the amount spent on selling its product, or the amount spent on the research and development of new products. The study of industry organization is primarily concerned with how a firm acts or reacts to market competition from other firms. The internal affairs of the firm--hiring, firing, the organization paints it buildings, or divides responsibility among its executives--are outside the subject of industrial organization.

How each firm, in reacting to the other firms in the industry, helps to determine the price, quantity and quality of the industry product sold in the market constitutes the market conduct of the individual firms, and the industry as a whole. Also included are the industry behavior with regard to advertising and research and development. Market conduct is usually described under three categories:

1. Price competition - policies which determine how prices are set
2. Non-price or "product" competition - policies which determine the quality of the product
3. Policies to coerce rival firms or to exclude the entry of new firms into the market

The range of behavior which are practical choices for a firm in conducting market affairs depends on the structure of the market. The monopolist has many options available. Because competition is held in check a monopolist can choose between objectives--profit maximization, rapid growth, reasonable profits and a peaceful business environment, etc. The monopolistic firm is sensitive to changes in the general economy and in competing industries, not to the market behavior of any rival.

At the other extreme is the firm in a purely competitive market which has no control over price. In pure competition there is no barriers to entry, and no product differentiation. The purely competitive firm must sell at the market price and no single firm has any control over the market price. There is no reason to advertise an undifferentiated product and, besides, each firm can sell as much as it wants without advertising. Any time the quality of the product is improved by one firm, all other firms must adopt the improvement or loose out on meagre profits. There are few questions about competitive conduct of firms which are not thrust on the firms in pure competition. Firms simply react to market conditions.

By the process of elimination, this leaves Oligopolies #1 and #2, together with monopolistic competition, as the industry structures with interesting problems of market conduct. The firms in these industries are sensitive to each other, that is, they show varying degrees of mutual interdependence. In particular, one might compare an oligopolist to a poker player who carefully watches the market moves of his rivals and conducts his business accordingly. The market game played by oligopolists is complex and interesting to study.

Price Competition in Imperfectly Competitive Markets

In monopolistic competition, there is alot of price competition between firms. The large number of sellers selling a very similar good or service assures that prices will change frequently, almost as much as in pure competition. However, in contrast to pure competition, where market competition determines the price, sellers in monopolistic competition set their own prices. But, even though the firm sets its price, sellers don't have much leeway; their price can't be far out of line with competitors' prices. Because of the competition between sellers, one firm can't charge much more than the going price without loosing almost all of their business, and if others lower price each firm must follow the pattern.

For instance, suppose that a new machine is invented to reduce costs, some firms will buy the new equipment and will lower their price. This forces other firms to do the same, or loose their sales to the low price competitors. Or, suppose demand for the product increases. There will be excess demand at the current price and some competitors will raise their price. They have more orders than they can fill and they reason that they can sell all they are producing at a higher price. Because all sellers have a similar experience, the price tends to go up throughout the market. To summarize, the range of possible prices which the firm can charge is very small and, for all practical purposes, we can talk about "the" market price.

In oligopoly markets there is even less leeway to charge a price different from the going rate, because competing firms are much more sensitive to each other. If one of five firms lowers the price of its product by 10%, buyers will flock to that seller, causing a considerable drop in sales of the other four firms. This drop in sales for the competitors is doubly disastrous, for the firms must reduce production way below their most efficient volume of output. The firms have only one recourse, to reduce their prices. In fact, they may retaliate by lowering prices more than the original price drop, thus starting a price war.

Because of this interdependence of firms--their sensitivity to each other--in oligopoly markets there is not too much price competition. Firms do not change their prices often. Furthermore, because a relatively few firms dominate the industry, it is possible for competitors to actually come to an agreement about the best price to charge. Open price fixing or price collusion between competitors is illegal in this country, but industry practices evolve which add up to the same thing as an open price fixing agreement. These formal or informal pricing arrangements eliminate most price competition and the result is that firms charge similar prices and these prices change infrequently.

Of course, even in oligopoly markets there is some price competition, because there are certain circumstances in which firms can successfully lower prices to take business away from competitors. This is particularly true between markets. Aluminum companies lower price to get business away from steel. In the same market, new kinds of businesses may be organized which can charge lower prices, as when the discount houses started competing with retail stores after World War II. Their major basis for growth was to charge lower, discounted, prices.

Firms can sometimes use price discrimination to get business away from competitors. There is price discrimination any time a firm sells essentially the same product for different prices to different buyers. Price discrimination can be detected if the price is set so that there is a higher mark-up over costs for some customers than for others.

Non Price Competition

The forgoing suggests that in imperfect competition, price competition is either ineffective in helping firms gain an advantage over competitors (monopolistic competition) or it is too dangerous to engage in except for certain kinds of price discrimination practices (oligopoly). Competitors therefore turn to other forms of competition involving changing the nature of the good or service they sell to make it more preferred among buyers. This is nonprice or product competition. It takes many forms: (1) advertising, (2) use of brand names, (3) packaging, (4) developing lines of different models and changing the models periodically, (5) providing services along with the product. Anything which the firm can do to differentiate it's product from that of competing products or services is an example of nonprice or product competition.

Firms engage in nonprice competition for two related reasons: (1) to try to increase their share of the market by taking business away from competitors, and (2) to reduce the price elasticity of demand for their product by making it more different and more desirable than competing products. Nonprice competition is possible only in markets selling a differentiated product. An interesting thing, and an obvious point once you start to think about it, is that nonprice competition tends to be greatest when the actual physical differences between competing products is minimal. For instance, the percentage of the sales dollar spent on advertising is a good indicator of the intensity of non-price competition. Automobiles are, at least on the outside, well differentiated and the auto industry spends less than 1% of sales revenue on afvertising. Boxed soap, however, is difficult to differentiate once its out of the box, but soap companies spend from 5-10% of sales revenue telling you that their soap is "new" "improved" "bold" "intensified" or that it has "hot power", or "cold power", or it gets clothes "brighther than white."

Obviously, all the soaps or detergents are basically the same and all do the same thing--they wash clothes. Cigarette and liquor manufacturers have similar problems and they spend 10% more of their sales revenue on telling the customer that their brands are "balanced," "Mellow," "smooth", "satisfying," "fun," or what have you.

Firms also change their packages, change the models of their products, change their model lines--the auto industry does this all the time, and they also change service provisions. Again, the auto industry is a good example of changing service provisions. Five years ago, most companies had a 30 day guarantee, then the 25,000 mile guarantee of the power train was introduced. This soon went to 50,000 and now includes all the mechanical mechanisms in and on the car.

Most of these non-price competitive activities are designed to convince the customer that the firm's product is actually "new" and "improved" but it takes an astute consumer, who uses all of the information available to him, really to tell whether the product, or only the box it comes in, has been changed.

3. Behavior to Reduce Competition

Lastly, firms try to get more market power--to weaken or eliminate market rivals, or to prevent other firms from entering the market. These are strategies for maintaining or increasing concentration in an industry. There are many practices designed to reduce competition. Some which are coercive are now illegal.

Predatory price cutting

This occurs when a strong firm (or firms) attacks a weak rival by forcing prices down so low that the weak firm cannot operate profitably. Predatory price cutting can result either in the weak firm's acceptance of the future dominance by the strong firm, or the elimination of the weak firm. This sort of conduct will also inhibit the entry of new firms into the industry.

The source of a strong firms strength may come from, lower costs, greater financial resources, a diversified output which allows it to cut the price of one product, or a nation-wide organization which allows it to attack rivals who only sell in regional markets. For example, a firm which produces a full line of power tools might be able to attack a firm which only produces hand drills. Or a firm which sells building hardware nationwide could attack a firm which operates only in a regional market. In either case, the firm with a full product line, or the firm with a nation-wide marketing organization can use price discrimination to cut prices in onw line or one market region and survive on its profits from other lines or regions while the weak rival could not survive.

Predatory raising of supply prices

This occurs when a vertically integrated firm, say a steel company which carries out all the processes of steel making from ore mining to the sale of fabricated steel products, raises the price of supply to a non-integrated rival. For example, a firm which only fabricates steel must have a source of supply for steel ingots. If the vertically integrated producer of steel ingots raises the ingot price to its rival but keeps the price low for its own fabricating division, the non-integrated rival cannot compete. The integrated firm squeezes the profits of its rival and can force it out of business.

Mergers and Vertical Integration

Existing firms at any stage of the production of a product can integrate upwards or downwards and thereby obtain a market position which allows them to squeeze out their rivals and, also, raise absolute barriers to the entry of new firms. Again, using steel production as an example, a firm which produces steel ingots may integrate downward so that it controls coal, iron ore and lime stone deposits, coking ovens and rail carriers which gives it increased power at the stage of ingot production, or it could integrate upward by building rolling, stamping, and fabricating mills so that it could have increased power in the semi-finished, and finished steel market. In either case, the firm would have the power to squeeze its non-integrated rivals and to raise the barriers to the entry of new firms at each stage of production.

VI. MARKET PERFORMANCE

We are now ready to return to the discussion with which this chapter began, that is, how market structure and conduct determine market performance. Performance, in turn, is measured by how well a firm or an industry helps to promote the goals of our economy. These goals are freedom, justice, progress, stability and security. and the goals of progress and stability are our principal concern in the study of industrial organization. Briefly, a firm or an industry promotes the goals of progress and stability if, 1) it is efficient, that is, a) its profits are normal which indicates it is not restricting output to keep up profits, b) it does not waste resources on unnecessary advertising or sales promotion, and c) the firms in the industry operate at an efficient scale of production, and do not have excess capacity beyond normal needs; (2) the firms in the industry are progressive and do not hold back the introduction of cost saving innovations and higher quality output; (3) the industry has flexible prices which reflect changes in supply and demand conditions, thereby permitting resources to flow from one industry to another to conform to consumer needs.

How do market structure and conduct affect industry performance with regard to these three criteria? If we could find an answer to this question we would have a rational basis for creating and evaluating government policy toward industry. This would be the rational basis for designing laws to regulate business structure and conduct.

You will see in working on the case studies which accompany this chapter that it is possible to predict a specific industry's performance from knowledge of its market structure--information on concentration, barriers to entry, product differentiation, price elasticity of demand and growth in demand. For instance, rapidly growing industries are progressive and often display a good deal of price competition and higher; the firms may or may not earn high profits. Generally speaking, there is not much price competition (inflexible prices) in oligopoly markets. Ordinarily, giant firms in oligopoly markets earn high profit rates. And so on.

Unfortunately, even though we can predict industry conduct from industry structure, it is not so easy to arrive at general conclusions about good forms of market structure. For instance, can we say categorically that oligopoly markets misallocate resources? Certainly there is a tendency for the larger firms to earn high profits, but are high profits categorically bad. Some argue that progress depends on huge expenditures on research and development which requires large financial resources. High profits of mammoth corporations can be used to finance research and development and investment in capital. Therefore, oligopoly markets may contribute to progress.

Certainly, it is true that market structure is affected by technological needs of production. In many lines of production there are economies of scale which require firms to make large investments in plant and equipment. And often these plants are so large that a relatively few plants can supply the market. Although it is important to question whether or not it is essential for corporations like General Motors, Standard Oil, General Electric to be as large as they are, it cannot be denied that big business is with us to stay and that it is efficient. But how big and powerful should these firms be? Is it possible to prevent firms from increasing in size beyond what is essential to promote and maintain efficient production? Are there ways to reduce nonprice competition? Is there some justification for the growth of conglomerate corporations which may tend to control several markets? These are the questions we can turn to after we inquire into a few industries in some detail.

ECON 12
UNIT 11

CHAPTER 14

PUBLIC POLICY TOWARD INDUSTRY

1. Introduction

Laws and Their Interpretation*

Public economic policy in the United States is directed toward inducing competition or inducing monopoly and there are laws and policies directing economic behavior along all parts of the line stretching between these two extremes. Although it might, at first glance, seem irrational both to discourage and to promote monopoly, this is not the case. As we have seen, the goal of industry organization is economic efficiency and the policy for a particular industry will depend upon the structure of the market. In most markets monopoly is considered undesirable, but this is not true in local telephone or transportation service. Public economic policy stretches between the extremes of discouraging and promoting monopoly because market structures vary between these extremes.

The various laws which form the structure of our economic policies have been passed at various times, for various reasons, and are supported by different interest groups--often for opposite reasons. They are, however, subject to rational economic analysis. The most important part of our economic policy is that devoted to the prevention of monopoly and the promotion of competition.

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* The main provisions from each of the specific laws mentioned in this chapter, together with a description of the main federal regulatory agencies, are given in the Readings for this lesson.

II. Laws for Promoting Competition

Sherman Anti-Trust Act, 1890

This act was passed at a time when America was experiencing the formation of large indistrial combinations--oligopolies and accasional monopolies. The development was disturbing to the people because it seemed to mark the end of open competition to the small businessman and the closing off of opportunity to the common man. The agitation against the growing size of industrial combinations was constant but the drive by entrepreneurs to reduce competition in order to survive in industries marked by rapid technological changes and increasing levels of capital expenditure could not be stopped. Firms made agreements to fix prices, to divide up markets and to cooperate in other ways. Often firms were merged but in the 1880's the most famous device to end competition was to form a trust.

The trust was a means of achieving monopoly concentration in an industry. It was a device whereby owners of stock in a firm would surrender their shares to a trust and receive trust shares in return. When the owners of firms representing a sufficiently large percentage of industry capacity had surrendered their shares to the trust, the effect was to give the trust sufficient market power to monopolize the industry. The trust was rather combersome and it soon gave way to the holding company--a device for using the assets of operating firms to buy the controlling interest in other operating firms in an industry in order to create a monopoly--but the trust did give its name to the first major United States statute decreeing competition and all similar policies since that time have been labeled anti-trust.

Section I of the Sherman Act makes any combination or conspiracy in restraint of interstate commerce illegal and states that any person who monopolized or attempted to monopolize interstate commerce was guilty of a misdemeanor punishable at a maximum imprisonment of one year and/or a maximum $5,000 fine. The provision in Section I against conspiring to constrain trade makes certain kinds of market conduct illegal, for example, price fixing, sharing markets, pooling profits. Section 2 seems to refer to acts designed to change market structure from competitive toward monopoly conditions, for example, increasing market concentration by merging firms, establishing a trust, or holding company.

The Sherman Act, as interpreted by the courts, did establish that formal agreements between firms to fix prices, pool profits, share markets, or limit output were illegal. However, the act was not vigorously enforced. Finally, suits were brought against two trusts, Standard Oil and American Tobacco, both of which controlled 90 percent of their markets. There was no doubt that both firms had attempted to, and succeeded in, monopolizing their markets, and were monopolies.

The Supreme Court found both firms guilty under Sections I and 2, and the basis for the ruling provided the first major interpretation of the Sherman Act.

In this instance, the Court interpreted Section I by enunciating the "rule of reason," which prohibited only unreasonable restraints of trade. Section 2 was also narrowly interpreted. Instead of ruling on the fact of a 90 percent market concentration, which constituted a monopoly, the court ruled that the successful attempt to monopolize had been carried out using vicious business tactics against rival firms.

The Standard Oil decision established a "double standard" of enforcement of the Sherman Anti-Trust Act which tended to increase rather than decrease market concentration. The court enforced the law against formal agreements between firms which tended to restrict competition and to monopolize, thus preventing increased concentration through the joint action of several firms. On the other hand, the Court did not break up firms with near monopolies unless their market conduct toward rivals had been or was vicious. Only then was the restraint of trade unreasonable.

The moral was an easy one for businessmen to draw. Don't make agreements between firms, merge them instead. The double standard whereby market conduct, which tended to monopolize, was illegal while market structure, which constituted a monopoly, was not illegal existed until 1945. In that year the Aluminum Company of America was found guilty under the Sherman Act solely because of its monopoly power. The company had not been guilty of vicious market conduct but it did control

90 percent of the manufacture of newly refined aluminum, which, said the Supreme Court, "is enough to constitute a monopoly."

The Court also said that it is doubtful if 60 or 64 percent control would constitute a monopoly and that certainly 33 percent would not. However, the important point of the ruling was not what degree of concentration constituted a monopoly but rather that market structure was accepted as a basis for determining an illegal restraint of trade.

The Clayton Act and the Federal Trade Commission Act

In 1914, the Clayton Act outlawed certain specific types of coercive market conduct which would "substantially lessen competition or tend to create a monopoly"; price discrimination, where one buyer has to pay more than another for a firm's products; buying arrangements, where a firm only sells a product if the buyer agrees to buy other of the firm's products; exclusive-dealing arrangements, where a firm will sell its products to a buyer only if the buyer takes none of its competitors' products.

An act establishing a Federal Trade Commission was also passed in 1914. The Commission was empowered to investigate the organization, conduct, and management of firms in order to eliminate "unfair methods of competition." It was the task of the Commission to determine what was "unfair" and, if it found an unfair practice, it could issue a cease and desist order.

Neither of the acts was effective because the final interpretation was left to the courts and they were reluctant to impose restrictions on market conduct. It was not until the Roosevelt New Deal that anti-trust legislation was vigorously enforced. But even then no dissolution of corporate giants under Section 2 of the Sherman Act was attempted. Market conduct, under the Clayton Act, was policed more carefully, especially misleading advertising, and new mergers were discourgged but there was no significant reductions of concentration in the major industries. In 1950 the Section 7 of the Clayton Act which forbids mergers was amended by the Celler-Kefauver Act. At the present time this is the most vigorously used anti-trust statute. Mergers which would have given the combined firms only a small share of a national market have been consistently blocked by the federal courts in sustaining rulings of the Federal Trade Commission.

Enforcement of Anti-Trust Laws

The enforcement of anti-trust laws has changed considerably since the passage of the Sherman Act in 1890. These changes are clearer if described in terms of laws concerning market conduct and market structure.

The enforcement of laws prohibiting certain types of market conduct have always been more vigorously enforced than those concerning illegal market structures. Under Section I of the Sherman Act, there has been a regular prosecution of attempts to restrain trade through formal agreements between firms. The Clayton Act of 1914 specified as illegal certain unilateral actions which firms could take, ..e., charging different customers different prices, forcing customers to buy a whole range of a firm's products in order to get one product, and forcing customers to deal only in a firm's products and not in the products of the firm's competitors. Prosecutions under the Clayton Act were not effective until the New Deal period but they have been consistent since that time.

The Federal Trade Commission, also created in 1914, was given the responsibility of administering the anti-trust laws as they pertained to business firms not engaged in banking activities or were not common carriers, for example, railroads or trucking lines. The Commission carries on all investigations of anti-trust violations. Any cases which have to be brought to trial are the responsibility of the Anti-Trust Division of the Department of Justice.

It is at this point in anti-trust enforcement that limitations on the effectiveness of the laws are most evident. The Anti-Trust Division of the Department of Justice has a budget which allows it to prosecute only 45 or so cases per year. About two-thirds of these are cases involving market conduct and a third involves market structure. Obviously, there are more than 30 violations a year of the laws governing market conduct. The laws are not really intended to eliminate all such violations because the cost to the government of such rigorous enforcement would be far greater than any advantage which would be gained. Rather, the laws are enforced in such a way that the possibility of prosecution is always there and this keeps the number of violations down to a socially acceptable level.

The enforcement of laws against illegal industry structure has, as we have seen, not been particularly effective. No significant rulings on Section 2 of the Sherman Act came until 1911 when the Court ruled that Standard Oil and American Tobacco were illegal monopolies. In both cases, the Court ruled that the reason these monopolies were illegal lay not in the fact of monopoly but rather in the vicious (unreasonable) tactics which the firms had used to create and maintain their monopoly power. This argument--the rule of reason--meant that firms could control a market so long as they were not predatory and conducted their affairs in a gentlemanly manner. This view was sustained in the U.S. Steel case of 1920 when the Court ruled that, although the firm had monopoly power, it had not coerced its rivals nor had it conspired to fix prices. "The law," said the Court, "does not make mere size an offense or the existence of unexerted power an offense."

The rule of reason meant that monopolizing through merger, or exercising market power, was not illegal so long as the firm's market conduct was not illegal. The rule of reason was altered in 1945 with the Aluminum Company of America decision which held that, even though Alcoa had engaged in no illegal market conduct, the fact that it held 90% of the market constituted a violation of Section 2 of the Sherman Act. In this case, the Court finally ruled that the fact of monopoly was illegal and the standard became market structure, not market conduct. This new standard was applied to the cigarette industry in 1946 when the three largest firms in the industry were convicted of exercising monopoly power. However, the government did not suggest a remedy which the courts could apply to an oligopoly in which three firms acted in harmony but without any formal agreements between them.

Since 1946 there has been continued debate on whether Section 2 of the Sherman Act should be interpreted by using the rule of reason or whether any single firm or oligopoly which exercises sufficient market power to give it control over prices should be broken up. Most economists support the market power standard. They argue that the test of efficiency should be applied to the industry in question. If profits in the industry are consistently above normal, then industry prices are too high and more resources should flow into the industry. Usually, the best way to increase industry efficiency is to reduce concentration by breaking up the firm or firms which control the market.

Since the Clayton Act of 1914, there has also been recognition that mergers and acquisition of one or more competing firms by another firm can also create undesirable market concentrations. Section 7 of the Clayton Act prohibited the acquisition, by a corporation, either directly or indirectly of the stock of, one or more competing corporations, where the effect would be "to substantially lessen competition." Section 7 was not enforced until it was amended and strengthened by the Celler-Kefauver Act of 1950. Since that time, the Federal Trade Commission has usually blocked any acquisition which has had the effect of substantially reducing competition in an industry.

The Celler-Kefauver Act also recognized that many industries were largely controlled by one or another of the many regulatory agencies of the federal government and it specifically excluded transactions authorized by these regulatory agencies and gave the authority for enforcement to the following boards and commissions: Civil Aeronautics Board (airlines), Federal Communications Commission (t.v., radio, telephone, telegraph), Federal Power Commission (gas and light companies), Securities and Exchange Commission (as it dealt with public utility holding companies), United States Maritime Commission (shipping companies), Interstate Commerce Commission (common carriers), and the Federal Reserve Board (banks and trust companies).

Summary

The anti-trust legislation in the United States is directed against 1) predatory market conduct, and 2) market structures which monopolize or tend to create monopoly. The laws against predatory market conduct have been enforced with sufficient energy and consistency to satisfy the moral demands which the public has placed upon the conduct of business activities.

The laws pertaining to monopoly market structures have been difficult both to interpret or enforce. Whether the courts have used the standard of the rule of reason (unreasonable conduct which monopolized) or the fact of monopoly power as the basis for their rulings, there have been few successful prosecutions of existing monopolies or oligopolies which control substantial percentages of their markets. However, under the terms of the Clayton Act, mergers and acquisitions of firms which have tended to create undesirable market concentration have been prevented.

On the whole, the anti-trust legislation and enforcement has been sufficiently effective to satisfy public opinion and to give the business community clear guidelines for conducting its affairs. The success of these policies is attested to by the fact that other industrialized nations have copied many of the anti-trust concepts which have been evolved in the United States since 1890.

III. Laws and Regulations Which Restrict Competition

Laws and regulations restricting competition have usually been developed when there is failure of the market mechanism to achieve efficiency in the industry concerned. There are three major areas where these restrictions have appeared: natural monopolies, quasi-natural monopolies, agriculture and retail trade. Natural and quasi-natural monopolies have generally been subject to regulation by public commissions; in agriculture competition has been restricted through crop controls and price supports; fair trade laws and prohibitions against certain kinds of price competition have been used in retail trade.

Natural Monopolies and Public Regulatory Agencies

The natural or quasi-natural monopolies constitute the core of the regulated industries but other industries which have not performed well in competitive market conditions have also been brought under federal or state regulation. Briefly, the federal regulatory agencies and the industries they regulate are:

1. Interstate Commerce Commission (1887)
    a. Railroads
    b. Highway common carriers
    c. Certain classes of coastal and intercoastal shipping
    d. Limited powers over interstate petroleum pipe lines

2. Federal Power Commission (1920)
    regulates rates and services of:
    a. Interstate natural-gas pipelines
    b. Price control over gas entering pipelines
    c. Interstate electrical energy transmission, and controls security issues, mergers, property sales, and accounts of electrical utilities engaging in interstate commerce.

3. Federal Reserve Board (1913, 1933) regulates many aspects of the transactions between commercial banks which are members of the Federal Reserve System.

4. Securities and Exchange Commission (1933) regulates securities exchanges and securities dealers in order to guarantee against fraudulent stock market dealings.

5. Federal Communications Commission (1934)
    regulates rates and services of:
    a. Telephone companies
    b. Telegraph companies
    and controls entry into, and assigns the scarce supply of radio and t.v. channels, and sets up guidelines for the quality and subject content of radio and t.v. broadcasts.

6. Federal Maritime Commission (1936) regulates grants of subsidies to shipping lines and certain classes of service.

7. Civil Aeronautics Board (1938) regulates the fares and services of domestic airlines and, by international agreement, of foreign airlines which operate in the American market.

Some of these industries, telephone , telegraph, and public utilities companies are natural monopolies, that is, service by more than one supplier would necessitate costly and inefficient duplication of services. Others are quasi-monopolies, for example, railroads and airline companies which may or may not duplicate services but are industries into which entry must be controlled in order to prevent costly and inefficient duplication of service. Other industries such as highway common carriers, ocean shipping, pipelines for natural gas and other substances, and radio and t.v. broadcasting are regulated for a variety of reasons having to do with the need to regulate rates and/or the quality of the service provided.

The problems of regulation are numerous and complex. For example, regulated industries must make normal profits if continued private investment in the firms is to be guaranteed. However, what are normal profits in industries with strong and weak firms? For example, if Firm A operates with costs 10% below those of Firm B and rates are set so that Firm B makes normal 6% profits, then Firm A makes 16% profits. If rates were set so that Firm A made normal 6% profits, then Firm B would operate at a loss. The rate problem is one which is constantly before regulatory agencies.

There is also the task of policing the service given by these companies. Radio and t.v. broadcasts must be monitored, safety regulation enforced on railroads, bus lines, and airlines, and, in any labor management dispute, the regulatory agency is inevitably involved because labor costs affect the rate schedules.

When judging the performance of a regulated industry, the economist seldom has a market standard upon which to base a judgment. Rather than ask the question of whether or not the industry performs well, the economist must ask whether or not the industry would be likely to perform better if regulation were removed and they were put under the anti-trust laws.

Laws Restricting Competition in Unregulated Industries

There are two main industries where public policy has consistently sought to limit competition: these are agriculture and retail trade. Both policies have arisen because of the failure of the market to provide industry efficiency or to satisfy public expectations.

Agriculture. Since the Civil War, when agriculture lost its dominant place in the American economy to other industries, there has been a steady movement of resources out of agriculture into other industries. However, the movement has not been fast enough; consequently agriculture has consistently had too many resources, especially human resources and, except for brief periods, below normal profits for most farmers. During times of war, farm prices and incomes have been high but generally farm prices are both too low and too unstable to insure adequate incomes for most farm families.

Most of the "farm problem" arises from the small, inefficient farmers who are unable, even with government aid, to compete successfully. In most other industries these individuals would be able to change occupations but it is often very difficult for people to leave the farm. Not only does a farm family have the problem of changing its economic base, but it also has the problem of changing from a rural to an urban culture. The dual problem of economics and culture which faces farm families if they wish to move out of farming into another occupation largely explains the fact that agriculture has usually had excess resources for the past hundred years.

Government agricultural policies have mostly dealt with the economic aspects of the farm problem and consequently have not produced any long-run solution to the problem of the small inefficient farm.

The current farm policies were laid down in the New Deal when production control and price support programs were applied to a wide variety of farm products. The purpose of these programs was to stabilize farm prices and to keep them from falling below the level of non-farm prices, and thus to help farmers attain normal profits and a secure annual income. The price support programs required the government to buy any of the supported crops at a set price and, at times, this led to the accumulation of large crop surpluses such as wheat, corn, and cotton. Usually, these surpluses have been sold off in bad crop years or they have been used for aid to underdeveloped countries.

The price support programs have tended to stabilize prices but they have not solved the problem of the small and inefficient farm where incomes have remained low, often at the poverty level. Price support or crop-control programs obviously help the larger farmer more than the small. The more land taken out of production, or the larger the crops sold at the support price, the higher the government payments to the farmer.

Furthermore, changing farm technology has worked to the disadvantage of the small farmer and most of these changes have resulted from government sponsored research. Because only a few farm units are large enough to carry on research, the federal government, in cooperation with state governments, and state universities, carries on an elaborate program of agricultural research. This research is so effective that productivity gains in agriculture have been spectacular. For example, farm output per man hour in 1960 was over 3 times as great as it was in 1940. Most of this research has introduced production techniques which have required higher and higher capital investments if farm operations are to remain efficient. Usually, the small farmer is unable to make such investments and an advance which helps the industry only worsens his own condition.

The government has yet to develop a program which has been successful in moving the excess resources from the agricultural industry--mainly people--into more productive industries. In 1959 there were still nearly a million farms (27% of the total) operated full time with annual sales less than $5,000 per year. These farms obviously provided the families with incomes far below what was required for a decent standard of living. In addition, there were 1.4 million "part time" farms with annual sales of $2,500 or less and most of these units were undoubtedly too small for efficiency.

Although the productivity increases in agriculture marks it as one of our most progressive industries, over half of all farm units are too small and under-capitalized for efficiency. The industry continues to employ too many resources but the movement of people out of farming into other occupations is a difficult cultural as well as economic problem. As yet, the federal government has not developed a comprehensive farm policy capable of dealing successfully with the whole range of farm problems.

Retail Trade. Policies to restrict competition in retail trade are almost exclusively concerned with protecting small business from chain store competition. The chain store concept originated in the late 19th century and, by 1930, chain stores had about 30 percent of all retail business. Since that time, the percentage has changed very little. Chain store development brought vertical integration to merchandizing.

The chain's many outlets permit large volume buying directly from the suppliers thereby allowing the chain to take over warehousing and distribution functions from the wholesaler. Possible savings are considerable, for example, in food distribution, savings can run as high as 10 percent of the costs of independents. All of the market relations normally present between wholesaler and retailer become administrative relationships within the organization of the chain. The technique works best with standardized commodities which require a relatively small amount of servicing. For example, chains account for 86 percent of variety store business, 84 percent for department stores, 58 for shoe stores, 43 for grocery stores, but only 8 percent for fruit and vegetable markets and 3 percent for bars and beer joints which require a relatively high amount of labor to serve the product.

Naturally, independent merchants fought the chains. For a while, independent merchant associations were able to get many state legislatures to lay special taxes on chains but these laws were usually found unconstitutional.

The independent merchants fostered the fair trade movement which received great impetus during the depression of the 1930's. Between 1933 and 1936, forty-two states passed fair trade laws which allowed manufacturers to set retail prices which had to be respected by the retailers. In 1937, Congress passed the Miller-Tydings law which exempted fair trade agreements from anti-trust prosecution.

These laws remained intact until the end of World War II when the rise of the discount stores, which thrived on the fact that the so-called legitimate stores had to charge the fair trade price, slowly destroyed them through price competition. Numerous suits were brought to force compliance with the fair trade laws but the court rulings were not favorable and by 1960 except in the drug and liquor trades they were dead.

Twenty-two states have fair trade laws dealing specifically with the liquor trade. Here the laws are justified on the basis of public morality rather than on economic grounds.

The only other effective restriction of retail competition is also a product of the stress of the Great Depression when businessmen of all varieties fought for survival. In 1926 wholesale and retail merchants associations got Congress to pass the Robinson-Patman Act which amended Section 2 of the Clayton Act which had prohibited price discrimination--that is, selling at different prices to different customers. The Robinson-Patman Act altered the general nature of the anti-discrimination prohibition by restricting it to sellers who discriminated in favor of large buyers (chain stores). The Clayton Act stated that sellers could not discriminate in price when the result "may be substantially to lessen competition or tend to create a monopoly in any line of commerce." The Robinson-Patman Act also prohibits discrimination when the effect is to "injure, destroy, or prevent competition with any person who either grants or knowingly receives the benefits of such discrimination." This says in effect that if a manufacturer or other supplier gives a large chain store buyer lower prices and it drives the chain's independent competitor out of business, then the manufacturer has broken the law. This law does not completely prohibit suppliers from giving large buyers lower prices when these lower prices actually represent lower costs but they inhibit such lower prices. Consequently, the Robinson-Patman Act could keep prices from truly reflecting costs.

This promotes economic inefficiency in two places. The suppliers can charge higher prices than would be the case in unrestricted competition, their profits will be higher than normal and the industries will have too few resources. The independent wholesale and retail merchants will be protected from the competition of the more efficient chain stores and the merchandizing industry will also have excess resources. The Robinson-Patman Act has eliminated certain kinds of predatory market conduct which chain stores had used in the past but, on the whole, its effect has been to reduce the vigor of price competition in merchandizing.

Summary

Protecting independent merchants from chain store competition is not a necessary safeguard against the rise of commercial monopolies. Higher than normal profits in almost any retail market will soon attract competitors. Retail markets are not large enough, nor are the barriers to entry high enough, to allow any effective monopoly power to be established. Consequently, most of the legislation designed to restrict competition in retail trade is difficult to defend on economic grounds.

ECON 12 TEXT
UNIT II

CHAPTER 15

INCOME DISTRIBUTION IN THE UNITED STATES

I. Introduction

This chapter tries to answer these questions:

How does the U.S. market system distribute income among the people living in the system?

Is there a trend, noticeable in the past several years, toward more or less equal distribution of income?

What measures would have the effect of reversing current trends?

We must start this study recognizing that income is unequally distributed among people in this and, in fact, in every country. Actually, for purposes of studying how income is divided up among the people in the U.S., economists study family income rather than the income earned by each individual. This is because the family is usually the decision making unit. If a family's income is inadequate when only one person works, a solution is for another member, perhaps the mother, to get a job. Then, usually, incomes are pooled and spent jointly by the family. Because of these family practices, economists study family income and spending practices, rather than individual actions. Thus, studying income distribution in the U.S. means to study how and why income is unequally distributed among families.

In this country, the unequal division of income derives from the fact that ours is a market economy, which means that people's primary source of income comes from selling productive services to business or government, or using their productive services in their own business.

Furthermore, these productive services include labor as well as property services. Thus, a family's level of income for any year depends mainly on it's control over productive resources. Families with high incomes either own a lot of income earning property such as land or factories or the family members can provide labor services which are in great demand. Families with low incomes usually own little or no productive property, have few if any persons who can work and, for those who do sell their labor, the services they can provide are not in great demand.

For instance, if your father is a school teacher, your family income is pretty much determined by the salary your father can earn teaching school, that is, unless you are a wealthy family, in which case your family income also depends on how you use this wealth. If your father is a farmer who owns his own farm, then your family income depends on the money you earn from your property and the family's labor. If your father is a retired millionaire and no one else works in the family, your family income depends entirely on how well your father manages his wealth.

The other source of income in this society, which can either offset or exaggerate the effect of market forces on family income, comes from government in the form of transfer payments of government tax revenue to certain groups in the society. Thus, for instance, a widow may receive survivor insurance benefits each month because her husband was included in the Social Security benefits program.

From the above it should be clear that in this country a family's income is affected by three general forces which together describe the effect of tradition, command and market forces on how income is distributed: (1) government taxing and spending programs which take income away from some groups and distribute the money or social services to other groups; (2) the distribution of private property holdings which provide a source of income either from the appreciation in value of the property or from rents, profits or interest payments earned for using the property in production; and (3) the distribution of labor services which determines a family's ability to earn wages and salaries in labor markets.

The following sections describe how these three factors affect family income distribution at present. We then describe the trends which first reduced and more lately seem to be increasing income inequality in the past forty years. This analysis should permit you to make your own judgments about the impact of our economy's market, property holdings and government structure on income distribution, thereby on the achievement of national goals. Your judgment depends on relating current income distribution trends to their impact on economic justice, security, freedom and growth. Generally, those who are critical of the unequal distribution of income in this country demand justice and security for all Americans, if necessary, at the expense of economic freedom of higher income groups. These people contend that an economy cannot be considered healthy if a large minority of the people are living at or near a poverty level standard of living, particularly when there are market forces and property relations which tend to keep these people poor.

Those who believe that unequal income distribution is just, contend that economic growth of the economy depends on encouraging people to act in their own self interest by permitting them to earn an income in proportion to their contribution to production. Only if people are free to earn wages, salaries, profits, interest and rent income according to what their labor or porperty services are worth to business and government, will people strive to use their labor and property in the most productive way. By allowing everyone to act in this own self interest, unhampered in his quest for wealth and high income, we will insure the most productive use of resources; the invisible hand of the market will be at work maximizing the wealth of the nation, just as Adam Smith predicted.

The analysis in this chapter is not an answer to this dilemma, because the answer depends, in part, on one's values. However, it sheds light on the controversy by providing the information you need to judge how this market economy works. This realistic understanding of the effect of government, property holdings and market competition on the distribution of income will permit you to predict future trends and the effect of government policies in increasing or narrowing the gap between the rich and the poor.

II. The Distribution of Personal Income among Families

It is commonplace to state that the American standard of living and level of family income are the highest in all the world. But few people realize just how modest the average American income really is, or how great is the range between the highest and lowest incomes.

Table I summarizes the recent statistics on the distribution of American families by income classes. This table describes the PERSONAL

DISTRIBUTION OF INCOME among families.[1] Column (1) divides family income into six different income classes ranging from $3,000 and under to $15,000 and over. Column (2) shows the percentage of families in each income class. Column (3) shows the percentage of the total of all income that goes to families in the given income class. Column (4) shows the percentage of the total number of families which belongs to the given income class or below. Column (5) shows the percentage of total income which goes to families who belong in the given or lower income classes.

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[1] By PERSONAL INCOME we mean the income earned by families from either wages, salaries, interest or rent payments, dividends from stocks, or transfer payments such as welfare or unemployment compensation from some government agency. Not all the national income earned in this country is distributed to families. In particular, corporations retain some profits and other income and do not distribute it to corporation owners--stockholders. Also, the government collects sales and excise taxes from businesses and this income is not received by families directly. In Section III we will look at the effect of the drain of this income on income distribution.

Table I: The Distribution of Personal Income by Family Units, 1965*

(1) Income Class	(2) Percentage of All Families in this Class	(3) Percentage Total Income Rec. by this Class	(4) Percentage of Families and Individuals in this Class and Lower Ones	(5) Percentage of Income Rec. by this Class and Lower Ones
Under $3,000	17	4	17	4
$3,000 to $4,999	16	7	32	11
$5,000 to $6,999	18	17**	51	28
$7,000 to $9,999	24	19***	75	47
$10,000 to $14,999	17	26	92	73
$15,000 and over	8	27	100	100
Total	100	100		
Median Income	$6,882			

*The Census definition of family excludes single persons not living in families.
**Figure includes income class $5,000 to $7,499.
***Figure includes income class $7,500 to $9,999.

Source: Bureau of the Census, Current Population Reports, Series P-60, No. 51, January 12, 1967, p. 2. Statistical Abstract of the United States, 1967, p. 332.

A glance at the table shows how pointed is the income pyramid and how broad its base. Although twenty-five percent of American families are in income classes $10,000 and above, they claim 53 percent of the total personal income. Seventy-five percent of the American families have incomes less than $10,000 and in turn receive 47 percent of the total personal income.[1] The middle or "median" income class

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[1] Some of these differences in money income are compensated for by non-money income. Poor people often receive charity gifts and free services; farm families grow their own food, and bright students often bring their families additional income in the form of scholarships and prizes.

(which divides the upper from the lower half of the people) amounts to a modest income of about $6,882. About 32 percent of American families, however, have an income of under $5,000.

Degree of Inequality in the Distribution of Personal Income

One way to measure the degree of inequality among income classes is to ask, what percent of all income goes to the lowest fifth of the population? The second fifth? The third fifth? And so forth. If incomes were perfectly uniformly distributed, each fifth or quintile of the population would receive exactly one fifth or 20 percent of the total income.

Table 2 (below) compares the actual income distribution of families and individuals by quintiles with a hypothetical distribution of perfect equality.

Table 2: Distribution of Personal Income Received by Each One-Fifth, and by the Top 5 Percent of Consumer Units*, 1965

(Percentage of Income)

Group in Population	Perfect Equality	Actual 1965
Lowest Fifth	20	5
Second Fifth	20	12
Third Fifth	20	18
Fourth Fifth	20	24
Highest Fifth	20	41
TOTAL	100	100
Top 5 percent		15

*The Census definition of family excludes single persons not living in families.

Source: Bureau of the Census, Current Population Reports, Series P-60, No. 51, January 12, 1966, p. 5.

As you can see, the poorest fifth of American families holds 5 percent of the personal income while the richest fifth receives 41 percent of the income--eight times as much! The top 5 percent of families claim 15 percent of personal income--three times the income received by families in the lowest 20 percent.

Effect of Income Taxes on Income Distribution. Taxes, especially graduated income taxes, alter the pattern of income distribution. Table 3 (below) shows the influence of such taxes by comparing personal income by income classes before and after payment of federal individual income taxes.

Table 3: Distribution of Personal Income
Before and After Federal Individual Income Taxes, 1964

Family Incomes	Proportion of Total Personal Income	
	Before Taxes	After Taxes*
Under $2,000	2%	2%
$2,000-$3,999	7	13
$4,000-$5,999	11	16
$6,000-$7,499	12	14
$7,500-$9,999	19	22
$10,000-$14,999	23	20
$15,000 and over	26	18
TOTAL	100%	100%

*Federal income taxes are estimated for each family and subtracted from total income to obtain disposable income.

Source: The University of Michigan, Survey Research Center, 1965 Survey of Consumer Finances, Monograph No. 42 (Ann Arbor, Michigan: Ann Arbor Press, 1966), pp. 16-17.

Federal income taxes have the effect of redistributing income in favor of the lower income classes. Those with incomes of $15,000 and over had their share of total money income of the nation reduced from 26 percent to 18 percent by the federal income tax. On the other hand, those who had incomes less than $4,000 had their share of total money income increased from 9 percent to 15 percent. If we include all taxes, direct and indirect, the redistribution is perhaps slightly greater. A study made by Richard A. Musgave in 1955 estimated that taxes used by all levels of government took less than 25 percent from incomes below $3,000 and nearly 40 percent from incomes above $10,000.[1] Despite the equalizing effect of taxation in 1964, families in income brackets under $4,000 received only 15 percent of the national income after taxes, while families in income brackets over $10,000 received 38 percent of the national income.

Lorenz Curve. The information in Table 2 can be put in graphic form by using what is called a Lorenz curve (the curve is named after its originator). Figure I below plots percentage of people, ranked from the poorest up (0 to 100%) on the horizontal axis and percentage of total income they receive on the vertical axis. If income distribution were perfectly equal, it would be represented by the diagonal line oy. The curve to the right of oy shows the actual distribution of income in 1964. The shaded area between the curve of perfect equality and the actual 1964 income distribution shows how much our actual distribution of income deviated from perfect equality and hence gives us a measure of the degree of inequality of income distribution.

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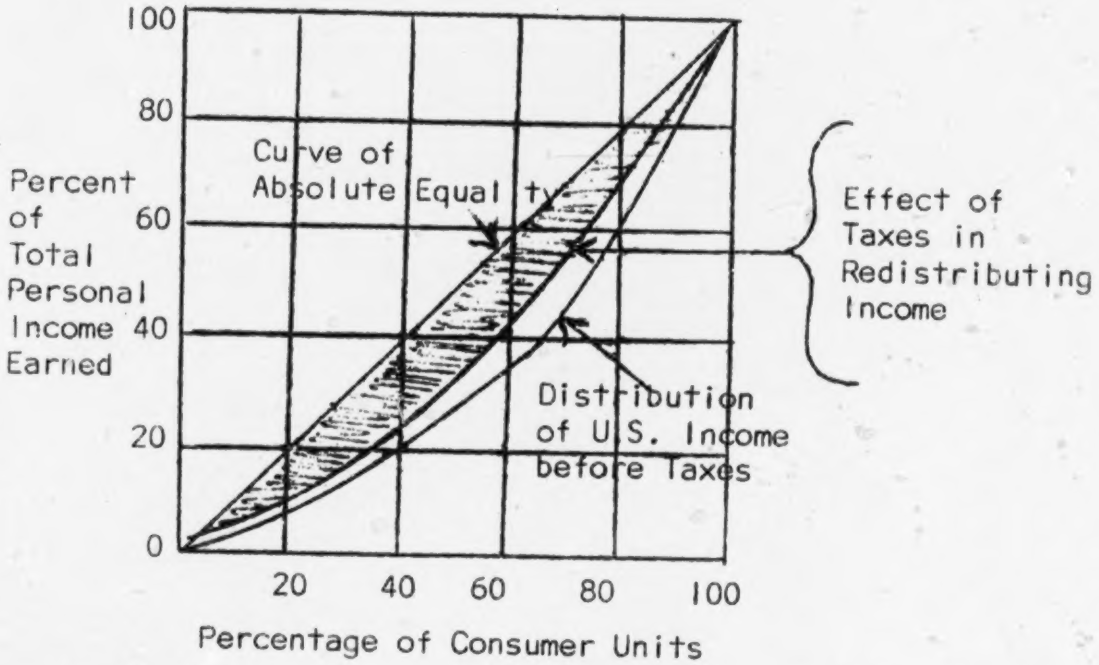
[1] See Joint Economic Committee, Federal Tax Policy for Economic Growth and Stability (Washington, D.C.: U.S. Government Printing Office, 1955), pp. 96-107.

Figure 1: Distribution of Income in the United States, 1964

Lorenz Curve



The light space in-between these two lines shows the effect of income taxes if they redistribute income to create more equality.

III. Functional Distribution of Income

There are two ways to describe income distribution. In the last section we described the PERSONAL DISTRIBUTION OF INCOME, the division of personal income among households or family units classified from low to high annual income classes. Here we introduce another way to classify income called the FUNCTIONAL DISTRIBUTION OF INCOME, so called because it shows the division of National Income among wages or salaries, rents, interest and profits. This is the functional distribution of income because it shows how National Income is divided up according to the function performed to earn the income. Table 4 shows the functional distribution of National Income for 1966.[1]

Since the time of David Ricardo, another famous English economist who wrote in the early 1800's somewhat after the time of Adam Smith, the distribution of income by function has been of prime interest to economists in search of economic laws explaining the effect of market competition and the market system on the distribution of income into wages, rents, interest and profits. Economists were searching for laws of the market which would permit them to explain and predict the inequality of income distribution among persons and classes. They were particularly interested in predicting changes in the relative incomes of wage earners, land owners (the aristocracy of that time) and the new capitalist class of factory owners and merchants at different stages in the development of capitalism. We introduce this study of functional distribution of income for much the same reason. Looking at the source of income will help us find the causes for the unequal distribution of income today.

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[1] In this section the income total we are analyzing is National Income rather than personal income. National Income is all of the income earned in the production of GNP, whether the income is received by families or corporations. Personal income is the total of all income received by households only, and it includes both labor and property income earned by households, plus transfer payments.

Table 4: Distribution of National Income by Functional Shares, 1967

Types of Income Shares	In Billions of Dollars	Percent of Total Income
Total National Income	$649.6	100.0
Employee Compensation		
Wages, Salaries, and Fringe Benefits	469.6	72.3
Proprietor's Income		
Business, Professional, and Farm	58.4	9.0
Property Income		
Corporate Profits	79.1	12.1
Rentals	20.1	3.1
Net Interest	22.4	3.5
Total Property	121.6	18.7

Source: *Economic Report of the President, January 1968.* (Washington, D.C.: U.S. Government Printing Office, 1968), p. 223.

Table 4 shows that about 71 percent of National Income produced in the United States went to employees as compensation for labor services. Income in this category includes wages, salaries, and fringe benefits such as social security insurance, and private pension plans. Some 18.7 percent of income is allocated to property owners as payment for rent, interest, and corporate profits. The remainder of income produced--9.0 percent--is received by persons who are self-employed businessmen, farmers, or professionals referred to in the national accounts as proprietors. The income earned by this category includes a mixture of labor and property earnings since part of proprietors' income is earned by providing *owner-labor* service and partly by providing owner-capital investments. Unfortunately, it is very difficult (if not impossible) statistically to disentangle proprietors' income into its two functional components, labor and property. Therefore, it is general practice to treat proprietors' income as a third category of National Income.

Changes in Functional Shares 1900-1965

There is considerable agreement among scholars that labor's share of National Income has increased moderately since 1900 while property's share has fallen. However, most of the increase occurred prior to 1930 and relative shares remained fairly constant since then. Three recent studies using somewhat different methods all arrive at the same conclusions.[1]

Tables 5 and 6 below summarize the changes in functional shares for the period 1900-1965. Table 5, taken from an earlier study of distributive shares in National Income, covers the period 1900-1957. Table 6 updates the data to 1965, showing changes in functional shares in five year intervals for the past two decades.

Labor's Share, 1900-1965. Labor's share of National Income increased from 55.0 percent of National Income in 1900 to 70.7 percent in 1965. Note, however, that most of the increase (11.8 percent) in labor's share took place during the years 1900-1930.

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[1] See (1) Irving B. Kravis, "Relative Income Shares in Fact and Theory," American Economic Review, December, 1959, pp. 917-49; (2) John W. Kendrick, Productivity Trends in the United States (Princeton, N.J.: Princeton University Press, 1961), p. 21; (3) E.F. Denison, The Sources of Economic Growth in the United States (New York: Committee on Economic Development, 1962), p. 30.

Table 5: Distributive Shares in National Income, 1900-1957
(Percent of National Income in Category)

Period	Total National Income	Employee Income	Proprietor Income	Property Income	Property Income		
					Corporate Profits	Interest	Rent
1900-09	100	55.0	23.6	21.4	6.8	5.5	9.1
1905-14	100	55.2	22.9	21.8	6.9	5.8	9.1
1910-19	100	53.2	24.2	22.6	9.7	5.2	7.7
1915-24	100	57.2	21.0	21.8	8.9	5.3	7.6
1920-29	100	60.5	17.6	22.0	8.2	6.2	7.6
1925-34	100	63.0	15.8	21.1	6.4	8.1	6.6
1929-38	100	66.6	15.5	17.8	4.3	8.9	4.6
1930-39	100	66.8	15.0	18.1	4.9	8.2	5.0
1934-43	100	65.1	16.5	18.4	9.1	6.0	3.3
1939-48	100	64.6	17.2	18.3	11.9	3.1	3.3
1944-53	100	65.6	16.4	18.1	12.6	2.1	3.4
1949-57	100	67.1	13.9	18.9	12.8	2.7	3.4

Source: I.B. Kravis, "Relative Income Shares in Fact and Theory," *American Economic Review*, Dec. 1959, p. 919.

Table 6: Functional Distribution of National Income by Percent, Selected Years, 1945-1965

Type of Income Share	1945	1950	1955	1960	1965
Total National Income	100.0	100.0	100.0	100.0	100.0
Employee Income					
Wages, Salaries, and Fringe Benefits	67.8	64.1	67.8	71.0	70.7
Proprietors' Income					
Business and Professional	17.3	15.6	12.6	11.3	9.9
Property Income					
Corporate Profits	10.6	15.6	14.2	12.0	13.2
Rentals	3.1	3.9	4.2	3.8	3.4
Net Interest	1.2	.8	1.2	2.0	3.0
TOTAL PROPERTY	14.9	20.3	19.6	17.8	19.6

Source: *Economic Report of the President*, 1967, p. 226.

There were a number of structural changes occurring in the economy prior to the 1930's which explain the large increase in functional shares in favor of labor. One of the most important was the declining role of the independent proprietor and the growing importance of the corporate form of business. As the independent businessmen and farmers became employees of a corporation, their income, which formerly would have been treated in the national accounts as proprietor's income, was then counted as wages and salaries. After 1930, the growth of the government as a source of income also shifted income to the wages and salaries category. The continuing increase in labor's share since the 1930's has also been largely "captured" from the self-employed category rather than property income. Proprietor's income, continuing the trend evident since 1900, declined by 9.5 percent during the years 1945-1965.

Some recent studies explain the increase in labor's share during the years 1900-1957 as the result, in part, of the increased productivity of labor relative to capital. Two such studies[1] indicate that the real wage level rose much faster than the rate of return to capital during this period. A number of factors were responsible for the increase in labor's productivity and hence the real wage rate: (1) "capital deepening" (i.e., providing more capital behind each member of the labor force); (2) scientific and engineering progress which furnished labor not only with more capital, but with better capital; and, (3) greater investment in human capital through more education and training.

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[1] Kendrick, op. cit.
Denison, op. cit.

Property's Share, 1900-1965. With the exception of a sharp decline in 1947, property's share of National Income fluctuated narrowly between 22.6 percent and 17.8 percent of National Income during the years 1900-1965. The relative stability of total property shares during these years, however, hides some important offsetting trends within the categories of interest, rents, and corporate profits.

Interest Shares. Interest payments fluctuated widely during the years 1900-1965 ranging from 0.8 percent of National Income to 8.9 percent. In the decade 1955-65 substantial increases in interest rates--partly the result of government policy and partly the result of a very rapid growth in private debt--increased modestly the interest share of National Income to 3.0 percent in 1965.

Rental Shares. The share of rental income declined from 9.1 percent in 1900 to 3.4 percent in 1965. This sizable drop was largely the result of the declining importance of agriculture (land) over the century. After 1934, rental shares became a very stable component of National Income fluctuating between 3.3 percent and 3.4 percent of National Income.

Corporate Profits' Share. Over the entire period 1900-1965, corporate profits ranged from 4.3 percent to 15.6 percent of National Income. Corporate profits showed no steady upward or downward trend but rather fluctuated widely with the level of economic activity. In general, corporate profits were a higher share of National Income during the years 1939-1965 than earlier periods. They were also more stable during this period fluctuating, with the exception of 1950, narrowly between 11.9 percent to 14.2 percent of National Income.

The National Income figures on corporate profits exclude depreciation allowances for businesses. Corporations "write off" capital investments by retaining some income each year to compensate for the wearing out of plant and equipment. Since 1956 there has been a progressive liberalization by the Congress and the Treasury Department of depreciation allowances which corporations can report as a cost of production for tax purposes; corporate income is actually much higher than these figures show. Unless this adjustment is made, corporate income (profits plus depreciation) as a share of National Income is understated, thereby giving us a distorted picture of the relative shares of National Income earned by labor and property.

Effect of Unions on Labor's Share

Many people view trade unions as a means of increasing the workers' share in the distribution of income at the expense of property owners--that is, at the expense of the receivers of rent, interest, and profits. A number of studies have tried to test this view, but there is no generally agreed to conclusion.[1] While all the studies show the ratio of wages and salaries to National Income have risen slightly since the 1900's, there is no evidence that this has occurred at the expense of corporate profits. The major explanation for the rise in labor's share is the shift in the composition of the labor force from the self-employed to the employee category (already discussed above). Hence it cannot be said that a rise in labor's share was a direct result of union power. The statistical evidence is not altogether convincing to those who are sympathetic to labor unions. They would counterargue that without unions there would have been a drastic decrease in labor's share and a drastic increase in profits; and that unions have at least been able to stem such a decrease.

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[1] For a summary of this literature, see Clark Kerr, "Labor's Income Share and the Labor Movement," in G.W. Taylor and F.C. Pierson, (eds.), New Concepts in Wage Determination (New York: McGraw-Hill Book Co., 1957). Also see Albert Rees, The Economics of Trade Unions (Chicago: The University of Chicago Press, 1962), p. 94. Rees admits, however, that unions have been effective in changing the relative wages.

IV. Sources of Inequality in the Distribution of Family Income

Now that we have discussed the relative importance of labor and property income in National Income we can do the same thing with personal income--determine the percentage of personal income made up by wages, salaries, interest, rent, profits and another category, transfer payments. By showing the sources of income, the functional distribution of personal income will give some clues as to why income is unequally distributed. In particular, it will show us the effect on income distribution of property ownership.

Table 7 shows four sources of personal income received by family units in 1965: (1) employee income, (2) proprietor's income, (3) property income, and (4) transfer payments. This table is similar to the data given in Table 4 which showed the functional distribution of National Income. However, this table describes the functional distribution of personal income instead of National Income. National Income includes income received by both families and corporations, while personal income includes only income received by families. Thus, personal income in Table 7 has an additional category of transfer payments, which are money payments obtained from the government for social security, unemployment insurance, public welfare, veterans' benefits, and the like. This source of personal income is called transfer payments because they are financed by the government through some form of taxation and "transferred" to households through the various social service programs. They differ from other sources of personal income in that they represent money income received but not earned for current productive services.

Table 7: Sources of Personal Income by Factor Shares, 1965

Source	Billions of Dollars	Percent of Personal Income
Employee Income	375.6	70.8
Proprietor's Income	54.5	10.3
Business and Professional	40.3	7.6
Farm	14.3	2.7
Property Income	74.6	14.1
Rental	18.6	3.5
Dividends	18.9	3.6
Interest	37.1	7.0
Transfer Payments[1]	39.2	7.4
TOTAL	543.9	102.5
Less: Personal Contributions to Social Insurance[2]	13.2	3.5
TOTAL PERSONAL INCOME	530.7	100.0

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[1] Includes such things as unemployment insurance payments, or workmen's compensation payments when one is out of work or injured; social security payments after one is 65 years old; veterans' benefits; welfare payments.

[2] These are the payments one makes to the government for unemployment insurance, or social security, etc.

Source: U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, Vol. 46, No. 4, April 1966, p. 5.

Distribution of Personal Income by Sources

Now we can combine the two ways of describing personal income distribution to show how the kinds of income are distributed by family income classes. This way of looking at income data is complicated but valuable because we can see if certain sources of income are more equitably distributed than others. Tables 8 and 9 give alternative tabulations of this sort. For each family income decile (i.e., each tenth of the population from lowest to highest incomes), Table 8 presents the percentage distribution of each kind of income. For each kind of income Table 9 shows what percent of that kind of income is earned by each family income class.

Table 8: Sources of Income within Total Family Income Deciles, 1964
(Percentage distribution of dollars received by families in each decile)

Income Decile	SOURCES OF INCOME						
	Labor Income[1]			Capital[2]	Mixed Labor Capital[3]	Transfer Payments[4]	Total Family Income
	Head	Wife and Other	All Family Members				
Lowest Tenth	29	5	33	5	5	56	100
Second Tenth	33	8	41	5	7	47	100
Third Tenth	50	11	61	7	8	24	100
Fourth Tenth	61	11	72	4	12	12	100
Fifth Tenth	69	12	81	4	9	6	100
Sixth Tenth	73	12	85	3	8	4	100
Seventh Tenth	73	14	87	3	7	3	100
Eighth Tenth	69	16	85	3	10	2	100
Ninth Tenth	61	22	83	4	11	2	100
Highest Tenth	56	12	68	13	16	3	100

[1] Earned income includes wage, salary, professional, trade and other self-employment income.

[2] Capital includes incomes from rent, interest, dividends, and trust funds.

[3] Mixed labor capital includes farm income of farmers and nonfarmers, unincorporated business income, and income from roomers and boarders.

[4] Transfer payments include social security, unemployment compensation, public welfare, veterans' benefits, and other transfer income.

Source: The University of Michigan, Survey Research Center, 1965 Survey of Consumer Finances, Monograph No. 42, p. 22.

Table 9: Distribution of Each Major Source of Income among Family Income Classes

(Percentage distribution of all dollars from each source of income)

Total Family Income Deciles	SOURCE OF INCOME[a].					
	Earned Income					
	All Family Income	Head	Wife, Other Family Members	Capital	Mixed Labor Capital	Transfer Payments
Lowest Tenth	*	1	**	1	1	11
Second Tenth	2	1	2	2	2	20
Third Tenth	4	4	4	5	3	16
Fourth Tenth	6	6	5	4	6	11
Fifth Tenth	8	9	6	4	6	7
Sixth Tenth	10	10	8	4	7	6
Seventh Tenth	12	13	11	5	6	5
Eighth Tenth	14	14	4	6	11	4
Ninth Tenth	17	15	24	9	15	6
Highest Tenth	27	27	26	59	43	14
TOTAL	100	100	100	100	100	100

* 0.6 percent
** Less than 0.5 percent

a. For definition of income sources, see notes to Table 8.

Source: University of Michigan, Survey Research Center, _1965 Survey of Consumer Finances_, Monograph No. 42, p. 23.

A careful study of Tables 8 and 9 reveals some very startling facts about the distribution of sources of family income. These facts may be summarized as follows:

(1) Income from all sources--labor, property, and transfer payments--is unequally distributed among the population.

(2) Property income, however, is more unequally distributed than labor income or transfer payments.[1]

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[1] Because of the concentration of property income in the high income classes, the relative size of the labor and capital shares in National Income becomes important. A rising trend in labor's share of total income makes for a more equal distribution of household income, while a declining trend will have the opposite effect.

(3) Earned income from labor is a major source of income for all income deciles. Contrary to popular belief, the upper groups (with the possible exception of the top five percent)[1] do not consist mainly of the idle rich. Most families with incomes of about $15,000 hold either salaried jobs or are self-employed and combine property income with substantial income from work.

(4) Transfer payments, as we would expect, are more heavily concentrated in the lower income deciles than the higher income deciles. They account for 56 percent of the income in the lowest tenth and 47 percent of the second lowest tenth. Although the highest tenth received a larger percentage share of transfer payments than the lowest tenth (15% as compared with 11%), the bottom three-tenth families received 47 percent of transfer payments as compared with 24 percent for the top three-tenth families. On balance, it is not clear to what extent transfer payments redistribute income in favor of the lower income brackets.[2]

V. Sources of Inequality in Labor Income

As the previous section showed, both labor income and property income are unequally distributed among families. Although there is more inequality in the distribution in property income, perhaps the differences in wage and salary earnings are more important. This is because for most people, particularly for the poor, labor income is the major part of family income.

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[1] Those in the top five percent income bracket receive only about ten percent of total wage and salary payments but more than two-thirds of the dividends payments and about half of all property income. (See Lloyd G. Reynolds, Economics; Homewood, Illinois: Richard D. Irwin, Inc., 1966, p. 421.)

[2] In order to determine the exact amount, it would be necessary to compare the interest paid on the national debt (which goes more to the rich) with benefits paid to veterans, aged, and expenditures on public health and education (which goes to the poor).

Generally, differences in wage and salary earnings stem from three sources: (1) differences in productivity among workers, (2) differences in market power, and (3) differences in opportunities to advance. In this section we will summarize the existing variations in labor income by examining wage differentials among workers on the basis of occupation, age, sex, color, region and education. Whenever we can, we will try to relate these wage differentials to the productivity, market power, and opportunities available to the groups being examined.

Occupational Wage Differentials

Variations in the relative earnings of workers by occupation is a major source of income inequality. As Table 10 shows, the labor market establishes widely differing wage rates for different occupation groups. In 1965 median incomes of family heads in civilian jobs ranged from $2,292 for household workers to $12,021 for self-employed professional men.

Table 10: Median Income of Family Head by Major Occupation Groups, 1965

Occupation Groups	Median Annual Earnings, 1965
Professional, technical, and kindred workers	$10,064
Self-Employed	12,021
Salaried	9,908
Managers, officials, and proprietors, exc. farm	9,721
Self-Employed	7,843
Salaried	10,547
Clerical and kindred workers	7,424
Sales workers	8,567
Craftsmen, foremen, and kindred workers	7,982
Operatives and kindred workers	6,872
Private household workers	2,292
Service workers, exc. private household	5,920
Farm laborers and foremen	3,028
Farmers and farm managers	3,997
Laborers, exc. farm and mine	5,327

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 49, August 10, 1966, p. 3.

Wage differentials in a free competitive market result from differences in native talent, education, training, productivity, and the difficulty or unpleasantness of the job. These occupational wage differences will widen or narrow over time, depending on how supply of the kind of worker reacts to demand. If demand for the higher skills is rising rapidly while supply is restricted by educational requirements or other bottlenecks, occupational wage differences may widen. But as educational training facilities are expanded, the supply of technical power may rise faster than demand, and wage differentials will narrow again.

Wage differentials by occupation may also result from market imperfections which place restrictions on labor mobility and thereby prevent movement up the occupational ladder. Some of the more important of these restrictions on the free mobility of labor are listed below:

(1) The training needed to prepare a person to enter many occupations is expensive in terms of time and money, or may require special physical or mental capabilities. Moreover, facilities for providing the training may be limited. Thus, the supply of doctors, some kinds of engineers, and business executives is limited relative to the market demand. This largely explains why these professions are among the highest paid among all occupations.

(2) Sometimes, restrictions upon entry are imposed by professional organizations, by unions, or by the state. These restrictions may take the form of requiring a license, high initiation fees, a prolonged period of training or apprenticeship, limited training facilities, or membership in a union which keeps its rolls closed. The American Medical Association, for example, has been able to limit the supply of the skills they represent through their control over training and qualifying examinations.[1]

(3) Many people, especially older people, hesitate to move to new areas or new occupations, even when a favorable opportunity is present.

(4) Barriers to entry into an occupation may be erected against particular groups--the aged, women, or Negroes. These barriers may keep wages in some lines above the level that they would reach without the barriers. Moreover, if they are sufficiently widespread, they will have an adverse effect upon earnings in the occupations which cannot be "protected" since

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[1] See Milton Friedman, Capitalism and Freedom. (Chicago: The University of Chicago Press, 1963), Chapter IX.

the supply of people wanting jobs in "open" occupations will be swelled by those turned away from "closed" occupations. Because of these barriers, wage differentials exist on the basis of age of head, sex, and color.

Differential by Age of Head. In a purely competitive economy, wage differences because of age should be related to efficiency. The young person just learning a job should naturally receive less than a mature person skilled in his job; the wages of an older person, whose efficiency is falling, should receive less than if he were at his prime. Table II (below) shows the distribution of family income by age and income classes. Family income shows a tendency to rise until the head reaches middle age and to decline thereafter as he reaches retirement age. It is hard to prove whether this trend can be explained by differences in productivity or because of discrimination in hiring and promotion against youth and the elderly.

Table II: Distribution of Family Income by Income Group and Age, 1965

Age of Head of House	Number of Families	Median Income	Total Money Income	Money Income Before Taxes				
				Up to $3,000	3 to $5,000	5 to $7,000	7 to $10,000	$10,000 and over
	Thousands	Dollars	Percent	Percent of All Persons in Group with Income				
14-24	3,050	5,399	100	21	23	28	21	7
25-34	9,291	7,041	100	12	15	23	32	19
35-44	11,094	7,867	100	9	14	19	28	31
45-54	10,460	8,238	100	10	12	16	25	36
55-64	7,489	6,885	100	17	16	21	21	28
65-over	6,895	3,460	100	43	24	11	11	10

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 49, August 10, 1966, p. 2.

Differential by Sex. There is a considerable differential between median incomes of men and women. For example, the median income for women in 1965 was $1,480 as compared to $4,976 for men (Table 12). The relatively low median income for women in 1965 can be explained in part by the sizable proportion of women who worked only part-time or intermittently during the year. However, even among year-round, full-time workers, the median income of women was substantially less than that of men--$3,800 as compared with $6,748. Equally striking differences between total money income of women and men are revealed when the percentages are compared at various price levels.

Table 12: Distribution of Income by Income Classes and by Sex, 1965

Sex of Head of House	By No. of Recipients	Per Capita Median Income	Total Family Income	Money Income before Taxes				
				Up to $3,000	3 to $5,000	5 to $7,000	7 to $10,000	$10,000 and over
	Thousands	Dollars	Percent	Percent of All Persons in Group with Income				
Male	54,827	4,976	100	21	19	23	22	15
Female	42,223	1,480	100	70	19	8	3	1

Source: U.S. Department of Commerce, Bureau of the Census, *Current Population Report*, Series P-60, No. 51, January 12, 1967, p. 32.

The relatively low income of women who worked full-time as compared with men is largely due to the concentration of women in lower paid occupations, such as clerical workers, operatives and service workers. Although data can be cited of unequal pay of women for the same work as men, on the whole, discrimination in the sense of paying men higher rates than women for the same kind of work is not openly practiced.[1] Rather, discrimination takes the more subtle form of not admitting women to the same jobs as men, thus barring them from many of the higher-paid jobs.

Differential by Color. Table 13 (below) demonstrates that there is a great disparity between the median income of white and nonwhite families.[2] In 1965, the median income of white families was about 45 percent higher--$7,170 as compared with $3,971 for nonwhites. If we compare income of whites and nonwhites by class levels, the differentials in some cases are even more startling. For example, 36 percent of nonwhites in 1965 had incomes under $3,000 as compared with 14 percent of whites. Some 77 percent of nonwhites had incomes under $7,000 as compared with 41 percent of whites. Moreover, only 10 percent of nonwhites had incomes over $10,000 while 27 percent of the whites fall in this income category.

Table 13: Distribution of Family Income by Income Group and Color, 1965

Color	By Number of Families	Median Income	Total Family Income	Up to $3,000	$3,000 to $5,000	$5,000 to $7,000	$7,000 to $10,000	$10,000 and over
	Thousands	Dollars	Percent	Percent of All Persons in Group with Income				
White	43,497	7,170	100	14	15	19	25	27
Nonwhite	4,782	3,971	100	36	25	16	14	10

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-61, No. 49, August 10, 1966, p. 2.

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[1] The Equal Pay Act of 1963, which became effective in 1964, expressly prohibits wage discrimination on the basis of sex. The Civil Rights Act of 1964 also prohibits discrimination in employment on the basis of sex, as well as race, color, religion, or national origin.

[2] Negroes comprise 90 percent of the nonwhite group.

According to the _1966 Economic Report of the President_, "available data shows that Negroes receive less income in every industry, in every occupation, and at every level of education."[1] The lower income of the Negro relative to the white stems largely from discrimination and lack of opportunity, which in part is explained by past discrimination. Table 14 (below) summarizes selected measures of discrimination and inequality responsible for income differentials between whites and nonwhites.

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[1] _Economic Report of the President_, January 1966 (Washington, D.C.: U.S. Government Printing Office), p. 107.

Table 14: Selected Measures of Discrimination and Inequality of Opportunity, Whites Compared with Nonwhites, 1965

Selected Measure	White	Nonwhite
Income[1]		
Median income of families	$6,858	$3,839
Percent of households in poverty[2]	17.1	43.1
Percent of families with incomes of $10,000 or more	24.1	8.3
Education		
Median years of school completed, males 25 years and over	12.0	9.0
Percent completed high school, persons 20-24 years	76.3	50.2
Male	75.6	51.3
Female	77.0	49.4
Percent college graduates, persons 25 years	9.9	5.5
Labor force participation rate[3]		
Male	78.6	76.0
Female	37.0	46.1
Unemployment rate (% of civilian labor force)[3]		
Adult males	2.9	6.0
Adult females	4.0	7.4
Teenagers	12.2	25.3

[1] Data related to 1964.

[2] Households are defined here as the total of families and unrelated individuals.

[3] Relates to persons 14 years of age and over.

Source: Department of Commerce, Department of Health, Education, and Welfare, and Department of Labor. (From the Economic Report of the President, January, 1966.

Because nonwhites have less education than whites, they are concentrated in the low-wage and low-skilled jobs. The resulting lower income makes them less able to afford a good education which means nonwhites have fewer years of schooling than whites. The high unemployment rate (largely a result of lack of skills, training, and discrimination) compounds the inequality in income between white and nonwhite.

Regional Wage Differentials. Wage differences exist between various geographical areas of the country as shown in Table 15 (below). The South has a much lower median income than other regions of the country, while median family income in the West and Northeast ($7,580 and $7,467 respectively) was substantially higher than the national median of $6,882. In the South, the median income was $5,536, or about 20 percent below the national median.

Table 15: Family Income Distribution by Regions, 1965

Total Money Income	Northeast	North Central	South	West
Percent	100	100	100	100
Under $3,000	12	14	25	12
$3,000 to $4,999	14	15	19	15
$5,000 to $6,999	19	19	19	17
$7,000 to $9,999	26	26	20	25
$14,000 to $14,999	20	19	12	21
$15,000 and over	8	7	4	10
Median Income	$7,467	$7,267	$5,536	$7,580

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 51, January 12, 1967, p. 4.

If we compare the four regions by size of family income (Table 15, above), we find that the South had the largest proportion of low income families (25 percent with incomes under $3,000) and the smallest percentage of high income families (16 percent with incomes of $10,000 or more). The proportion of families with incomes of $10,000 or more was highest in the West and Northwest, 31 and 28 percent, respectively, as compared with 26 percent in the North Central Region.

The difference in income between the South and the rest of the country stems largely from the fact that the South contains larger proportions of farm residents and nonwhites whose earnings are relatively low. The income differentials between the South and other regions is not as great among white workers as among Negro workers, especially those with year-round, full-time jobs.

Differential by Education. There is a definite positive relation between income and education of family head. Table 16, page 169, shows that the median family income tends to rise as the educational attainment of the head increases.

Table 16: Distribution of Family Income by Income Group and by Education of Family Head, 1965

Years of School Completed	By Number of Families	Median Income	Total Money Income	Money Income before Taxes					
				Up to $3,000	$3,000 to $5,000	$5,000 to $7,000	$7,000 to $10,000	$10,000 to $15,000	$15,000 and over
(head)	Thousands	Dollars	Percent	Percent of All in Groups with Income					
Less than 8 yrs. (elem.)	6,645	$ 3,681	100	41	25	15	9	8	6
8 years (elem.)	8,174	5,430	100	22	20	19	14	11	7
1-3 yrs. high school	8,886	6,519	100	17	20	21	21	16	10
4 yrs. high school	14,277	7,504	100	13	20	24	31	30	22
1-3 yrs. college	4,587	8,426	100	5	12	16	19	24	30
4 or more yrs. college	5,710	10,993	100	2	3	5	6	11	25

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 51, January 12, 1967, p. 22.

In addition there are more chances for greater advancement in one's career for the better educated. In 1964, the median income of families headed by college graduates at the beginning of their careers was about $8,800. At their peak in their late forties and early fifties, families headed by college graduates had a median income of $12,900, or about 47 percent higher than the median for younger graduates. In contrast, the relative difference between these two age groups among all families headed by elementary and high school graduates was about 28 percent.[1]

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[1] U.S. Department of Commerce, Bureau of the Census, Current Population Report, Series P-60, No. 47, Sept. 24, 1965, pp. 6-7.

Opportunity to Advance: Training and Education. For an individual to achieve his full productive potential, two conditions must be met: (1) he must have the opportunity to acquire the necessary education and training to develop his native talents, and (2) he must have the opportunity to obtain job experience in his field of special training. If either of these conditions is denied or rejected, the result is a two-fold loss. The individual never realizes his potential, and society is deprived of the benefit of his greater capabilities.

Although free education is available at the elementary and high school levels, it has not led to equal educational opportunity for all. Large regional differences exist in the quality of elementary and secondary education in the United States, resulting in inequality of educational opportunity for lower income classes, especially some minority groups. Since education is not generally free in institutions of a higher learning, inequality is greatest at the college and post-graduate level. Those who can afford higher education are relatively free to buy it. But those who cannot pay for it, or who cannot afford to forego the income they might produce if they entered the work force, must go without its benefits.

To a certain extent, opportunities to develop one's productive capacities and to obtain suitable employment are being equalized through social legislation. The GI Bill of Rights, which permitted many servicemen to obtain academic training they would not otherwise have been able to afford, gave talented persons a unique opportunity to acquire the training for the more skilled jobs of which they were capable. The Higher Education Act of 1965 established a broad program to make higher education available to all who may benefit from it. Its most important innovation is a program of educational opportunity grants of up to $1,000 for 115,000 high school graduates from low income families. In addition, a guaranteed loan program and an expanded work-study program provides aid for more than 700,000 students.

The 1964 Civil Rights Act also contains several important provisions that alter conditions which make discrimination possible. Its Title VII directly outlaws discrimination in hiring, firing, conditions of work, apprenticeship or training, and established the Equal Employment Opportunity Commission to carry out these provisions. Although hiring attitudes will not change abruptly, the Civil Rights Act, nevertheless, makes an important direct attack on this basic barrier to full equality.

One factor partly offsets these developments in social legislation. That is the fact that both the time and cost required to become highly skilled in a trade or profession has been increasing substantially in the past decade. Unless increased financial aid is extended to those unable to finance long periods of training, inequality of opportunity may increase.

Summary

In summary, we have found that there are four major sources of income inequality in the United States among persons: (1) unequal distribution of property resources; (2) wage differentials among workers related to occupation, age, sex, race, and education; (3) unequal market power--i.e., the ability to rig the market in one's behalf, and; (4) unequal opportunity to develop one's productive capabilities to the full.

Differences in wage differentials would occur in a highly competitive economy only if they represented differences in labor productivity of the groups. Furthermore, in a competitive economy with equal opportunity (equal access to jobs, education, training, etc) the only cause of differences in labor productivity between people would be due to physical, intellectual or personality differences. Women may earn lower wages as freight loaders because they lack physical strength. A woman might also be paid less if she is more likely to quit the job sooner than would a man, thus putting the employer to the expense of hiring and training someone else. An easy-going youth might be less productive for the same reason, or his productivity might be lower because he has less experience; however, these factors might be offset by his greater energy.

The statistics we have seen are not so easily explained away by individual differences in these groups when we look at the differences in levels of education among these groups and examine differences in hiring practices of employers. Why do Negroes complete a fewer number of years of schooling, and why are women not considered for certain jobs? Are there legitimate reasons for employers' hiring practices, and are lower education levels for nonwhites due to personal choice and intellectual inabilities? If we can assume that women, the young, the elderly, the nonwhites are equally potentially capable of holding high paying "think" jobs, then we must concede the existence of some barriers to access to these jobs. And we must ask the further questions, are things improving for these groups? Are past customs breaking down to reduce the inequalities of opportunity?

IV. Trends in Personal Income Distribution in the United States, 1929-1964

In the United States, we justify the market system's method of distributing income on the grounds that such a system, although resulting in an unequal distribution of income, will achieve a higher standard of living for our population than is possible under a system of equalitarianism. The drive for profits under a market economy fosters a continuing growth for the economy which in the long-run yields more income to all than if income were unequally divided. Let us look at the empirical evidence in the United States for the years 1929-1965 to determine whether, 1) the size of the pie per family in the United States has in fact increased, and 2) the gap between the extremes which exist between the highest and lowest income groups in our population has been growing or narrowing.

Changes in the Size of the Pie per Family

There has been an impressive gain in the size of the United States income pie and the median U.S. family income, expressed in constant 1965 dollars, rose from $4,275 in 1947 to $6,882 in 1965.[1] This represents an average increase of about $145 a year, and a 61 percent gain in real income over the 18 year period.

Trend by Income Class, 1947-1965. Table 17 pg-1[illegible] shows the changes in the percentage distribution of families by income levels for selected years from 1947 to 1965.

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[1] U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 51, January 12, 1967, p. 2.

Table 17: Percentage Distribution of Families by Income Classes, Selected Years, 1947-1965 (in constant 1965 dollars)

Total Money Income	1947	1955	1960	1965
No. of families (thousands)	37,237	42,889	45,456	48,279
Percent	100	100	100	100
Under $3,000	31	24	20	17
$3,000-$4,999	31	24	19	16
$5,000-$6,999	19	24	22	18
$7,000-$9,999	12	18	21	24
$10,000-$14,999	7	8	13	17
$15,000 and over		2	5	8

Source: United States Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, No. 51, January 12, 1967, p. 2.

The table shows that the proportion of families with incomes under $3,000 fell from 30 percent in 1947 to 17 percent in 1965. Those with incomes between $3,000 and $4,999 decreased slightly more during the same period. Conversely, there was an equally dramatic increase in the percentage of families in the higher income groups. Thus, between 1947-1965 the increase of median income, i.e., the increase in the size of the national income pie, was accompanied by a gradual whittling away of numbers in the group at the bottom and a persistent increase in the size of the group at the top.

This data is mainly a reflection of the general prosperity of the United States economy since World War II, which has suceeded in raising most people's standard of living. The increase in the percentage of working wives has also played an important part. Little more than 10 years ago, women in only 25 percent of the families worked in contrast to 36 percent today. In 1966, the median income of families in which the wife was a paid worker was $9,200--30 percent higher than the $7,100 median in families in which the wife does not work. Another factor tending to raise family income has been the upgrading in work skills. In the past decade, there has been an increase from 10 percent to 15 percent in the proportion of family heads employed in professional, technical, and similar occupations. Finally, the increase in the number of families with other sources of income--dividends, rental income, and interest--rose from 36 percent to nearly half of all families by the end of 1967.[1]

Changes in Gap between Rich and Poor

Distribution of Income by Quintiles, 1929-1965. Does the data also show that the share of the national income going to the lower income brackets increased relative to the higher income brackets during the same period? In other words, has the gap between the percentage shares of the richest and poorest income levels of our population narrowed over time?

Table 18 gives us a partial answer. The share of income going to the top 5 percent of the nation's families fell from 30 percent in 1929 to 15 percent in 1965. The share of the top fifth showed the same trend falling from 54 percent in 1929 to 41 percent in 1964. In contrast, the share going to the middle three-fifths (second, third, and fourth fifths) rose from 42 percent in 1929 to 54 percent in 1964--almost exactly the reverse of the trend of the top fifth. Thus, the middle quintiles were the major beneficiaries of th cut in the "slice" of personal income received by the top income quintile.

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[1] Forbes, Feb. 1, 1968, p. 51.

Table 18: Distribution of Personal Income* Received by Each One-Fifth and by the Top 5 Percent of Consumer Units, Selected Years, 1929-1965.

Spending units arranged by size of income	Percentage of income accounted for by each fifth of the population						
	1929	1935	1941	1947	1955	1960	1965
Lowest fifth	13	4	4	5	5	5	5
Second fifth		9	10	12	12	12	12
Third fifth	14	14	15	17	18	18	18
Fourth fifth	19	21	22	23	23	23	24
Highest fifth	54	52	49	43	42	42	41
Total	100	100	100	100	100	100	100
Top 5 percent	30	27	24	18	17	17	15

* Before Income Taxes.

Source: U.S. Bureau of Census; Historical Statistics of the United States, Colonial Times to 195., p. 166, and U.S. Bureau of the Census, Population Reports, Series P-60, No. 51, January 12, 1967, p. 5.

What about the lowest income quintile? Since 1929, the proportion of total income received by the poorest fifth of the population has now shown a pronounced changes In fact, from 1955 on there has been no significant change in the income share received by any fifth of the families.

Reduction in Income Gap, 1935-46. The narrowing of the personal income gap between the lowest and highest fifth of consumer units noted in Table 18 took place mainly between the depression years 1935-36 and the conclusion of World War II in 1946. There are a number of factors responsible for the reduction of the inequality gap between these years.

First, the New Deal era brought a marked increase in government transfer payments to low income groups. Such social welfare measures as old age pensions and assistance, unemployment compensation, veterans' benefits, aid to dependent children, and general relief helped to raise the share of the bottom fifth, thereby shifting an appreciable share of the nation's income from the upper to the lower income groups.

Second, there appeared to be a long-term trend toward a more equal distribution of wealth, therefore a more equal distribution of property income. Table 19 below shows that between the 1920's and 1950's the percentage of the nation's wealth held by the top one percent of the population was reduced significantly. This is reflected in a sharp decline in dividend payments going to the top wealth-holders. Simon Kuznets has calculated that during the 1920's the top 5 percent of income recipients got more than 80 percent of dividend payments and more than 55 percent of all property income. By the late 1940's, however, they were getting only 70 percent of the dividends and about 40 percent of all property income.[1]

Table 19: Percentage of Wealth Held by the Top One Percent of Wealth Holders

Year	Percentage of Wealth Held
1922	31.6
1929	36.3
1933	28.3
1939	30.6
1945	23.3
1949	20.8
1953	24.2
1956	26.0
1961	28.0*

* An estimate by Robert Lampman provided to Business Week.

Source: Robert Lampman, The Share of the Top Wealth Holders in the National Wealth (New York: National Bureau of Economic Research, 1962). As reported in Business Week, January 27, 1962, p. 3.

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[1] Simon Kuznets, Share of Upper Income Groups in Income and Savings (New York: National Bureau of Economic Research, 1953).

There were a number of important factors accounting for this long-term trend toward greater equality in distribution of wealth during this period. Previously, great fortunes had been accumulated by speculating in land values, exploiting natural resources, charging monopoly prices, and defrauding corporate investors. Moreover, such fortunes were passed on virtually intact from generation to generation because of very low inheritance taxes. During the 1930's the enactment of such laws as the National Securities and Exchange Act, steeper inheritance taxes, and stricter enforcement of the Antitrust Act not only made it more difficult for private fortunes to be made in the same ways the earlier ones were obtained but also reduced the amount that could be passed on through inheritance.

It should be noted, however, between 1949 and 1961 there was a reversal of the trend with an increase in the percentage held by the wealthiest individuals, indicating that a possible reversal in the trend toward greater equality in the distribution of income.

Third, there was a marked reduction in the occupational wage differential between manual workers and white-collar workers between 1935 and 1945. Wages of manual workers rose relative to white-collar salaries, and laborers' wages rose relative to those of skilled workers. A major factor explaining the narrowing of wage differentials was the rapid expansion of educational and training facilities which increased the supply of technical and professional manpower faster than the demand for them.

Fourth, during and immediately after World War II, high demand for food raised farm prices and brought a relative improvement of the farmer's position. In contrast, the farm population was a particularly depressed group in the 1930's. The more favored position of the farmer in the 1940's combined with the relative decline of the agricultural sector where income levels are lower than in urban occupations, narrowed the gap in the income distribution of the nation as a whole.

Fifth, some economists suggest that the rise of organized labor had an important impact on equalizing incomes during this period, crediting unions with increasing the level of real wages, narrowing wage differentials, and increasing labors' productivity. For example, labor unions by asking for equal amounts (not percentages) of increases for different grades of labor tended to promote greater equality between wage earners. Unions also directly and indirectly fostered increased labor productivity in several ways: 1) union security raised worker morale, 2) higher wage scales resulting from union activity tended to stimulate interest in labor-saving devices by management, and 3) workers were more willing to accept technological advance when they felt they had union protection.

Students of labor economics are sharply divided as to the effects of labor unions on the personal distribution of income, and some would disagree strongly with the above conclusions. One scholar in this field offers the following cautious summary of the economic effects of unions on relative wages:

> "We tend to overemphasize the role of the unions, both in . . . their own industries and . . . the economy as a whole . . . The other two-thirds may have their wages and salaries influenced by what the unions do, but I feel there are very strong independent forces on the demand side that govern their rates of pay. . . Even in the . . . unionized (one-third) there are some very weak or almost impotent unions that have had very little to do with the wages of their members. . .

> "In a series of rough guesses, I would say perhaps a third of the trade unions have raised the wages of their members by 15 percent to 20 percent above what they might be in a non-union situation; another third by perhaps 5 percent to 10 percent, and the remaining third notat all. . . The high figures tend to be found, not in periods of inflation, but in periods of prospertiy combined with stable prices. . . In (an inflationary) period like 1946-1948, for example, the union people may even lag behind simply because of the rigidities involved in the collective bargaining process."[1]

Sixth, some of the increase in equality between the 1930's and 1946 can be ascribed to the lower level of unemployment during the war years. Variations in the level of unemployment undoubtedly influence the distribution of income. Since the income of those susceptible to unemployment are concentrated in the lower income brackets, a decrease in unemployment will increase the degree of equality and vice versa.

Seventh, there was a significant trend toward a more equal distribution of opportunity. In 1929 there were proportionately more immigrants in the country than there were in the late 1940's. This declining portion of immigrants--a group which often found itself at a disadvantage in the labor market--tended to increase the income level of the lowest income brackets. Furthermore, there is evidence that the degree of discrimination against the Negro declined somewhat so that the lowest income brackets gained relatively as the Negro improved his position relative to whites.

Also, the main wave of internal migration from the farm to the city during this period had been accomplished by the 1950's. It is probable that the first generation of farm immigrants found the adjustment to urban opportunities difficult, but that the second generation born and reared in the city, made a better adjustment.[1] Mention was previously made of the broadening of educational opportunity brought about by the G.I Bill of Rights. All these factors, no doubt, were effective in tearing down traditional barriers in specific occupations.

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[1] Albert Rees, Wage Inflation. (New York: National Industrial Conference Board, 1957), pp. 27-28.

No Change in Income Gap Since Late 1940's. Since the late 1940's many of the tendencies toward equalization of income have slowed and in some cases have been reversed. This can be explained by the end or reversal of most of the trends cited above, in particular:

(1) there was little further shrinkage of occupational wage differentials; in fact, in some industries differentials widened;

(2) between 1949 and 1961, there was a reversal of the trend toward more equal distribution of property ownership, due in part to the steady increase in stock prices during these years;

(3) steady increase in interest rates during the post-war years, which has tended to check the drop in the relative importance of property income;

(4) increases in pension rates, unemployment compensation rates, and other transfer payments have done little more than keep pace with price inflation;

(5) organized labor was possibly weakened during this period; and

(6) changes in corporate income tax laws after 1954 probably favored the upper income brackets.

Summary

On balance, the safest conclusion is that income distribution by quintiles since 1950 has shown no marked trend toward either greater or less inequality, i.e., the income gap has remained constant. If there is a trend toward greater equality in the United States, it is difficult to discern. And it should be pointed out, that in the future more equal distribution of income may possibly be affected even more adversely by such variables as the age distribution of the population, the increased cost of attaining higher incomes, and the rise in the cost of living. The young and the old people we have seen earn less than those in the middle-age bracket; this fact will, by itself, tend to make the distribution of income less equal. The increase in the number of young people also means that families are educating more children than previously. Furthermore, the cost of education is going up for the average family both in terms of tuition and the length of time needed to complete an education. The cost of living, too, has steadily been creeping upward. However, at present we can only guess at the importance of these variables on the future distribution of income.

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[1] Myron H. Ross, Income: Analysis and Policy (N.Y., McGraw-Hill, 1965), p. 392.

CHAPTER 16

POVERTY IN THE UNITED STATES

Recent estimates indicate that 32.7 million Americans, including 15 million children, are poor.[1] Can we, must we, urge a "war on poverty?" To help you answer these questions, we must answer several other preliminary ones for you in this reading. What is poverty? Who are the poor and what are their characteristics? Why are they poor? What kind of assistance do the poor get from the rest of the society?

DEFINING POVERTY

There is no objective definition of poverty any more than there is an objective definition of art or beauty. The standards of poverty are determined according to a country's stage of technology, wealth and capabilities. Most of the poor in the United States have a much higher level of consumption than many not considered poor in India today. Indeed, the poorest 20 percent of the families in the United States may have higher standards of living than the wealthy class of fifty years ago. But such comparisons don't mean much to our poorest families who look about them and see how little they have in comparison with what other Americans have. When we say that approximately one-fifth of our people are poor, we mean that the income level of these people, as compared with the current national median income of American families, is inadequate to enable them to enjoy what is considered the minimum basic necessities enjoyed by other American families.

Two types of poverty yardsticks are currently in use: one identifies the poor as those falling in the lowest income classes; the other measures the poor as those living below some minimum decency standard of living.

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[1] Economic Report of the President Together with Council of Economic Advisors Annual Report, January, 1967 (Washington D.C.: U.S. Government Printing Office, 1967), p. 138.

Income Level Poverty Line

In the 1964 Economic Report of the President, the Council of Economic Advisors adopted the first yardstick--the "income line" definition of poverty. It classified as "poor" any family whose money income was under $3,000 a year, or any single person whose income fell below $1,500. Using that definition, the Council estimated that 20 percent of American families and 45 percent of unrelated individuals, a total of 35 million persons, were poor in 1962.

Ideally, a standard of poverty should take into account not only current income, but it should also adjust for differences among regions, size of cities, family size and composition, asset holdings, and non-money income of households. The $3,000 poverty line adopted by the Council of Economic Advisors in 1964 fell short of this standard on all counts.

Minimum Decency Standard of Living

In 1965, the Social Security Administration developed a new and more complex measure of poverty which takes into account family size and composition, and differences between living conditions in urban areas and farms.[1] Under the new standard, the 1964 poverty-income line for nonfarm families of four persons was raised to $3,130; for farm families of this size it was lowered to $2,190. A maximum poverty line of $5,090 was used for a family of seven or more. Nonfarm individuals were defined as poor if their money income was below $1,540; for farm individuals, $1,080. Although this set of rules gives a more precise definition of the poor than the single measure based on current income alone, still it does not reflect differences in cost of living between regions of the country, or differences in family asset holdings. Nevertheless, in 1965 it was adopted by the Council of Economic Advisors and the Office of Economic Opportunity as a rough guide pending further research.[1]

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[1] Mollie Orshansky, "Counting the Poor: Another Look at the Poverty Profile," Social Security Bulletin, XXVIII, January 1965, pp. 3-29.

The definition of poverty developed by the Social Security Administration is based on a minimum, nutritionally-sound food plan designed by the Department of Agriculture for "temporary or emergency use when funds are low." The food costs in this subsistence plan are used to determine the minimum total income requirement for different sized families. Budget levels for farm families are reduced by 30 percent to allow for lower cash expenditures required where home-grown food is available and to recognize the lower cost of farm housing.

The more sophisticated statistical approach shifted emphasis away from the aged and farmers and toward large families and children, but it did not affect the total number of the poor. The number of farm residents classified as poor fell by over one-third, from 4.9 million to 3.2 million. The number of children rose by 40 percent, from 10.8 million to 15 million. The number of aged poor families dropped from 3.1 million to 1.5 million.

Despite its numerous shortcomings, the income poverty line of $3,000 originally established in the 1964 Economic Report of the President is still a widely used point of reference for defining the poor. Its main advantages are its statistical simplicity and the fact that it is the only definition for which time series data are available on the characteristics of the poor.[2]

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[1] See Economic Report of the President, Together with Council of Economic Advisors Annual Report, January 1966 (Washington D.C.: U.S. Government Printing Office, 1966) pp. 110-114. Also Office of Economic Opportunity, Dimensions of Poverty in 1964 (Washington D.C.: U.S. Government Printing Office, 1965).

[2] Robert J. Lampman, "Population Change and Poverty Reduction, 1947-1975," Leo Fishman, ed., Poverty Amid Affluence (New Haven: Yale University Press, 1966) p. 18.

WHO ARE THE POOR?

CHARACTERISTICS OF THE POOR

The evidence indicates that poverty shows up everywhere. Every social, ethnic, regional, occupational and age group has its poor. However, some groups are worse off than others. The poor are concentrated in one or more of the following categories:

1. Old people, 65 years of age and over
2. Disabled persons
3. Widowed, divorced or separated women who are heads of household
4. Nonwhites
5. Small rural farmers, especially from the South
6. The illiterate or poorly educated
7. Children from large families

Table I gives a breakdown of the selected characteristics of all families and of poor families for the year 1965. More than one-third (35 percent) are headed by someone aged 65 or older; three-fifths have no more than eight years of schooling; over one-fourth are headed by women; over a half (53 percent) are not gainfully employed (i.e., they are either not in the civilian labor force and/or unemployed); more than one-fifth (21 percent) are nonwhite; almost half (45 percent) live in the South; and about 15 percent live on farms. With regard to these characteristics, the table shows notable differences between the poor and the total population.

WHERE ARE THE POOR?

Regional Poverty

The poor are everywhere; there are more than 1.4 million poor families in the Northeast, more than 2 million in the North Central region, more than 3.7 million in the South, and more than a million in the West. (Table I) However, the South is burdened with much more poverty than other regions. A family from the South has more than double the chance of being poor than a family living in any other region of the country.

Table I

SELECTED CHARACTERISTICS OF ALL FAMILIES AND OF POOR FAMILIES, 1965*

Selected Characteristic of Head of Household	Number of Families (thousands)		Percent of Total	
	All Families	Poor Families	All Families	Poor Families
TOTAL	47,835	8,419	100	100
Age of Head of Household				
14-24 years	2,931	724	6	9
25-54 years	30,679	3,413	64	41
55-64 years	7,497	1,342	16	16
64 years and over	6,728	2,933	14	35
Education of Head				
8 years or less	15,156	5,005	32	60
9-11 years	8,874	1,535	19	18
12 years	12,860	1,261	29	15
More than 12 years	9,945	561	21	7
Sex of Head				
Male	42,829	6,210	90	74
Female	5,006	2,188	10	26
Labor Force Status of Head				
Not in civilian labor force	8,750	4,138	18	49
Unemployed	1,211	334	3	4
Employed	37,874	3,901	79	47
Color of Family				
White	43,081	6,634	90	79
Nonwhite	4,754	1,773	10	21
Children Under 18 in Family				
None	19,559	4,577	41	54
One	8,898	1,344	19	16
Two	8,339	867	17	10
Three or More	11,039	1,622	23	19

(Continued----)

Table I Continued------

Selected Characteristic of Head of Household	All Families	Poor Families	All Families	Poor Families
Earners in Family				
None	3,727	2,695	8	32
One	20,804	3,849	44	46
Two	17,628	1,569	37	19
Three or More	5,676	284	12	3
Regional Location of Family				
Northeast	11,900	1,428	25	17
North Central	13,500	2,106	28	25
South	14,500	3,741	30	45
West	7,900	1,098	17	13
Residence of Family				
Rural				
Farm	2,749	1,223	5	15
Nonfarm	14,192	3,278	30	39
Metropolitan				
In Central Cities	14,851	2,243	31	27
Outside Central Cities	16,043	1,652	34	20

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* Poor families are those with a total income in 1965 of less than $3,000.

Sources: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Consumer Income, Series P-60, No. 47, Sept. 24, 1965.

Statistical Abstract of the U.S., 1966, p.341.

Current Population Reports, Consumer Income, Series P-60, No. 48, April 25, 1966.

Rural Poverty

Nearly half of the poor families (46 percent)[1] live in rural areas, characterized by rundown farms and communities, largely concentrated in the southern part of the country. In 1965, 15 percent of the rural poor eked out a bare existence either as small-scale farmers, hired farm workers, domestic migratory workers or share croppers. Although the labor force devoted to farming has declined by one-half since 1940, the market for the skills required in agriculture is still depressed.

Approximately 39 percent of rural poor families are nonfarmers. Their income is low because they live in depressed communities developed around such declining industries as farming, mining, lumbering, and railroad construction.

These rural areas are not only economically depressed, but they provide inferior community services. For instance, rural people lag almost two years behind urban residents in educational attainment; rural children receive one-third less medical attention than urban children.[2] Consequently, such areas have become derelict communities, composed of population with inferior education and lacking in physical and mental vigor. The able, aggressive young people migrate. Since the 1940's, more than 26 million rural families have migrated to the cities. Of those who remain, there are a disproportionate number of aged persons and persons inadequately equipped to compete successfully in modern industry.

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[1] "Rural Poverty Program," Message from the President of the United States, January 25, 1966, 89th Congress, 2nd Session, Document No. 367, p. 1.

[2] Ibid., p. 1.

Urban Poverty

In 1966, more than half of the poor families lived in metropolitan areas.[1] Although most of them live in cities, what is perhaps least recognized is that over 20 percent of the poor families live on the fringe of large cities. (Table I) The poor who live in industrialized cities are confined for the most part to overcrowded slum and ghetto districts. Not only do they live in old and rundown buildings, but they are also denied adequate parks and playgrounds and community facilities for recreation and social life. With urban areas receiving millions of unskilled migrants from rural areas in the past two decades, the poverty conditions in our urban areas have grown worse rather than better.

Pockets of Poverty

A significant portion of the poor are located in what can be identified as "pockets of poverty." Among them are Appalachia, the Ozark plateau, and portions of the Upper Great Lake states. In these depressed areas, unemployment is chronic even when the nation as a whole is enjoying full employment opportunities. Such areas are economically depressed either because of depletion of natural resources, changes in consumer tastes, or technological progress.

WHY ARE THE POOR POOR?

People are poor for many reasons, but for purposes of analyzing what to do about poverty, we can identify three broad categories. The first includes families headed by able-bodied male breadwinners who have low annual earnings. In 1964, 54 percent of poor family heads were members of the labor force.[2] In the second category are those who cannot or do not support themselves by participating in the labor force. In 1964, 49 percent of poor family heads were neither working nor looking for work. (Table I) A third category which partially overlaps the other two includes those who are poor because of large family size. In 1964, 41.1 percent of families with five children or more were poor.[1]

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[1] Report of the President's National Advisory Commission on Rural Poverty made in Feb. 1967 as reported in the San Francisco Chronicle, Feb. 6, 1967, p. 6.

[2] See Table I. Of the 54 percent who were members of the labor force, 47 percent were employed and 4 percent unemployed.

Poor with Low Earning Power

A family head with low earning power suffers from irregular employment and/or low wages. This condition stems from four basic factors: 1) inadequate aggregate demand, the failure of the economy to provide enough jobs for all the members of the labor force; 2) low productivity of individuals; 3) low demand for labor in declining occupations or industries (structural unemployment); and 4) discrimination, limited job opportunities for certain groups.

Inadequate aggregate demand. When the economy is in a business recession, there are not enough jobs to provide paid employment for everyone who is able and willing to work. Low aggregate demand was the major cause of poverty in the 1930's. It was also significant during the years 1957-1965 when the unemployment rate averaged 5 1/2 percent. Since early 1966, very little unemployment is directly attributable to inadequate demand. The overall unemployment rate has dropped below 4 percent,[2] generally considered the benchmark of full employment.

Low productivity. In 1966, some two million[3] breadwinners had such low hourly earnings that their annual incomes were insufficient to keep the family above the poverty line. These wages indicate a large number of persons with low productivity. Low productivity may be the result of deficient education and training, lack of opportunity, poor health, or physical or mental deficiencies.

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[1] Mollie Orshansky, "Recounting the Poor--A Five Year Review," Social Security Bulletin, Vol. 29, No. 4, April 1966, pp. 24-25.

[2] Economic Report of the President, 1967, Table R-22, p. 239.

[3] Ibid., p. 5.

For the most part, heads of low income families are concentrated in low-paying occupations such as farming, semi-skilled factory work, service work, laborers, and the like. (Table 2) At least 10 million employees receive a wage of less than $1.50 per hour, and many farmers and other self-employed persons, who are rarely counted as unemployed but are sometimes underemployed, earn low enterpreneureal income.[1]

Structural Unemployment. The structurally unemployed are those who lost their jobs because of changes in the structure of the society and remain unemployed for a long period of time (15 weeks or more) because of obsolete skills. Unemployment may be caused by plant closings, plant relocations, a rapid technological change. It may be the result of the workers living in a depressed area or in an area rapidly changing in technology. Because of poor education, inability or difficulty in learning new skills, unwillingness to move from areas with contracting industries to new areas with expanding industries, the structurally unemployed have severe problems in finding new jobs. Some of them can find only intermittent employment. Others, none at all. In 1966, there were approximately one million unemployed who would be classified as structurally unemployed.[2]

Discrimination. It is hard to look at the data on employment and earnings of youths, the elderly, women and nonwhites without concluding that some form of discrimination must exist in hiring and promotion practices. The fact that earnings for these groups are lower and that unemployment rates are often higher cannot be refuted. The question is what causes these differentials? Are these groups less able members of the labor force? That is, do they have lower productivity than others who do the same work, and are they incapable of holding higher paying jobs? From the standpoint of efficient resource allocation, the only justification for lower earnings is lower productivity. If these groups are in fact less productive, why are they less productive? Lower productivity is partially a reflection of discrimination by employers and the society as a whole if these groups do not have equal opportunity to education, to get work, to get promoted and to stay employed.

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[1] Lampman, op. cit., p. 22.

[2] Economic Report of the President, 1967, p. 57.

It is very difficult to document the existence of discrimination using statistics on earnings and employment. One must study hiring procedures and personnel policies of employers to find out if personal traits affect hiring, advancement and lay-offs. We must study differentials in public education. The existence of discrimination has been generally accepted and has been the basis of public legislation such as the Fair Employment Practices Act forbidding employers operating in interstate commerce from discriminating against certain groups in hiring and state laws requiring employers to pay equal pay for equal work. Discrimination is a serious problem because it is unjust by preventing certain members of the labor force from developing more productive skills, thus retarding growth.

Poor Unable to Work (Hard Core Unemployables)

Some 6 1/2 million poor, constituting almost half of the poor families, are headed by persons who cannot or should not be in the labor force, at least on a full-time basis.[1] Such family heads are increasingly becoming the dominant group of "hard core poor"--those families who live permanently below the poverty line of annual income per family.

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[1] Harry G. Johnson, "Unemployment and Poverty," in Fishman, ed., op. cit., pp. 188-189.

Table 2

OCCUPATION OF EMPLOYED HEAD IN FAMILIES WITH INCOME UNDER $3,000, 1963

Occupation of Family Head	Percentage Employed
Total employed--4,167 thousand families	100.0%
Professional, technical, and kindred workers	3.5
Self-employed	0.8
Salaried	2.7
Farmers and farm managers	21.2
Managers, officials, and proprietors	
Excluding farms	8.5
Self-employed	6.9
Salaried	1.6
Clerical and kindred workers	3.5
Sales workers	2.6
Craftsmen, foremen, and kindred workers	8.4
Operatives and kindred workers	17.1
Private household workers	4.6
Service workers, excluding private household	11.7
Farm laborers and foremen	7.8
Laborers, excluding farm and mine	11.1

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Consumer Income, Series P-60, No. 45, "Low Income Families and Unrelated Individuals in the United States, 1963," (Washington D.C.: U.S. Government Printing Office, June 18, 1965), p.9.

Non-participation in the labor force may arise from a number of reasons: (1) the head of the household is unable to work because he is past retirement age, chronically ill, or physically or mentally disabled; (2) the head of the family is a woman needed in the home because of the responsibilities for care of young children. Such a family situation--commonly referred to as "broken homes"--may result from divorce, desertion, illegitimacy, or death of a husband; or (3) the breadwinner, although physically able to work, is not actively seeking work either because of discouragement about finding a job or lack of motivation. These groups are frequently referred to as the "hard core" unemployables.

It is estimated that there are 1/2 million to 1 million potential workers who are not even counted as unemployed in the official statistics.[1] These are family heads from blighted family or community environments who have withdrawn from the labor force because of discouragement about job opportunities. Some in this category have never even tried to find work.

Those who are among the "hard core unemployables" suffer from personal disadvantages which make it difficult for them to get a job or hold jobs even when the economy is booming. Many of them are functionally illiterate. They frequently suffer from poor health and physical defects. Some are mentally retarded or physically handicapped. Some suffer from emotional instability. Others have prison records. Many have poor work habits and lack motivation and discipline. They lose jobs because of absenteeism, tardiness, and inability to follow instructions. Some are younger workers who are unwilling to take low paying jobs, but lack the patience, discipline, or opportunity acquired training for better ones.[1]

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[1] Economic Report of the President, 1967, p. 57.

Poor Because of Large Family Size

At lease five million of the fifteen million poor children are in families whose heads had a regular full-time job in 1963 but whose incomes were too low to lift the family out of poverty.[2] Some 72 percent of poor persons are in families of three or more persons and 36 percent are in families of six or more persons. Large family size operates primarily to reduce the share of the family income available to meet each individual member's needs; but it can operate in various ways to reduce the total family income, notably by preventing the mother from working.

In "Children of the Poor" Mollie Orshansky points out that non-white families are considerably larger than the average family size of whites. Three out of every five mother-child families with six or more children are non-white, but only one out of five among those with one child. A fourth of the husband-wife families with six or more children are non-white, in contrast to 7 percent of those with a single child.[3] To some extent, the slower progress of non-whites against poverty can be explained by their more rapid rate of population growth.

THE RELATION BETWEEN LABOR MARKET STRUCTURE AND POVERTY

We have described who the poor are, where they are and what conditions make them poor. Now it is time to assess the possibility and strategy for eliminating poverty altogether in this society.

Except for the extreme political conservatives, most groups advocate government action to help the poor. The conservatives contend that poverty cannot and should not be eliminated because in a healthy, competitive free enterprise economy there will always be poor people who do not, cannot, compete. However, the majority opinion, as expressed by recent actions by the Federal Government, considers the existence of poverty a weakness in our economic system because the poor do not share the general prosperity of the country.

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[1] Ibid., p. 108.

[2] "Counting the Poor: Another Look at the Poverty Profile," Social Security Bulletin (January 1965), p. 6.

To do something about poverty, it is necessary to understand how our society creates poor people--how poverty is related to the structure or conduct of our economic system. Then we can take action to alter the structure or conduct to improve the performance of the system--to eliminate poverty.

In the U.S. poverty exists because some people earn low personal incomes and, furthermore, they do not receive adequate public services to offset this low income. They do not have the purchasing power and there are not enough public services to allow them to maintain an adequate standard of living. Because low income families earn most of their income from selling labor services, it is important to look at factors affecting demand and supply of labor in different occupations and industries.

In a market economy, workers with higher productivity earn higher wages. Furthermore, as demand for workers changes, due to changing demand and supply conditions, competitive market operation should cause workers to move from occupations or industries where wages are lower to higher paying jobs. Thus, through the operation of competitive markets (of the law of supply and demand) persons tend to earn an income equivalent to what they contribute to production. In addition, the reaction of labor force members to changing wages and salaries assures that workers will move to occupations and industries where there is an increased demand for labor.

To the extent that labor markets are imperfectly competitive, people cannot or do not respond to changing labor market conditions very fast or at all. The result is that some groups earn higher wages and salaries than they should while others earn lower incomes or no income at all. To get a clear picture of what factors create low paying jobs and unemployment it is necessary to study labor market demand and supply conditions.

The Demand for Labor

Demand for labor is determined by the needs and hiring practices of American industry and government agencies. Today these employers are demanding more and more skilled workers, technicians, professional and managerial personnel. As our economy becomes more technologically advanced there are proportionately fewer unskilled and semiskilled jobs. This trend towards more skilled occupations means that employers are demanding more education and training of job applicants and that, as new demands arise in industry and government, labor force members must be willing to get additional training to move into entirely new jobs and locations. Modern American industry requires a well educated and mobile labor force.

While changing demand for labor explains the long-run trends and changes in the kinds of available jobs, personnel policies of employers explain who gets hired and who advances to higher paying jobs. If labor markets were perfectly competitive, market supply and demand conditions would determine wages, working conditions and hiring practices. In fact, for most jobs the employers (or the employer and union) make these decisions. The more market control the employer has over demand for workers, the more control the employer has in making these decisions. Where collective bargaining exists, the union and management bargain together to determine wages, fringe benefits, working conditions and hiring and firing practices. If workers are dissatisfied they can file a grievance and the union will represent them in working out a solution with the employer. If there is no union, the individual employee ordinarily has little power by himself to affect wage and employment decisions. His main resource is to threaten to quit a job which he finds unsuitable and to look for another. If the employee is very important to the business operation, then this threat will force the employer to satisfy the employee's demands. Otherwise, the disgruntled employee stays disgruntled or finds a job somewhere else.

It is important to learn how hiring and personnel practices in business and government affect the poor. Do these practices discriminate against certain groups of people? The statistics provided in the previous chapter suggest that, on the average, employers are less willing to hire women, young people, older people, minority ethnic groups. Although employer preferences relfect actual lower productivity of these groups, if it is easier to get a job if you are white, male and between 25 and 40, then these other persons are discriminated against and employer practices affect who the poor are.

The Supply of Labor

You have learned that the poor earn low incomes or are unemployed altogether. Outside of a period of general unemployment when there are not enough jobs to go around, it is safe to say that low paid or unemployed workers don't have high paid skills, and often they have not been willing to move away from chronically depressed industries or regions. For some reason the poor do not or cannot respond to changing demand for labor. The big question is why. Are they incapable of being part of the high paid labor force or are they a wasted resource? What determines the amount and quality of a person 's education, how much job experience he gets, how eager a person is to work and to advance himself economically, how willing he is to change jobs and locations in search for better paying jobs?

The current interest in programs to improve education, housing, health and recreation for the poor rests in part on the assumption that being poor affects a person's economic opportunity and his expectations about work possibilities. Social environment--home life and community life--determines economic opportunity and motivation to work for economic pay offs. Recent studies show that the poor receive inadequate or inferior social services such as education. Furthermore, living in poverty affects expectations about the possibility for getting or holding a good job; the poor have less incentive than others to go to school, to get jobs, to change jobs, etc. Thus, in addition to raising current standards of living for the poor, these programs will affect the supply of labor by upgrading abilities and increasing mobility of people who grow up in slums or rural poverty.

PUBLIC ASSISTANCE AND SERVICES FOR THE POOR

Although we hear a lot about programs providing services to the poor, actually most government services go to higher income groups. Public highways, bridges, schools, libraries, the post office serve the public in general and therefore directly benefit higher income classes more than the poor. Public servies such as police and fire protection, in protecting property as well as lives, directly benefit property owners more than other citizens. Table 3 shows the amounts spent on social welfare expenditures under public programs. Note that even when education (representing a third of the total) is included, still public welfare expenditures comprised only 42% of government expenditures in 1965.

Even though public assistance programs for the poor do not make up a major portion of government expenditures, these programs are extensive (Table 3) and they do affect income distribution (Table 4). Poverty would be more prevelant in the U.S. today if the federal, state and local governments did not accept responsibility for maintaining the incomes of people who do not earn an adequate income trhough their own effort. Three broadly different approaches to income maintenance have been used: 1) programs of social insurance, financed by earmarked payroll taxes with benefits fixed by formula and without any suggestion of "charity"; 2) public assistance, more commonly referred to as "welfare," which is wholly based on need and financed out of general revenues; 3) public provision of services such as medical care, housing, and urban renewal, usually financed through general revenues rather than payroll taxes.

Table 3

SOCIAL WELFARE EXPENDITURES UNDER PUBLIC PROGRAMS: 1935 to 1965

In millions of dollars. Represents expenditures under public law and from trust accounts. Includes administrative expenditures and capital outlay for hospitals, public elementary and secondary schools, and publicly controlled higher education.

Year and Source of Funds	TOTAL	Social Insurance[†]	Public Aid	Health and Medical Services	Other Welfare Services	Veterans Programs	Education	Public Housing	% of Gross Nat. Prod.	% of Governm. Expenditures for all purp.
TOTAL										
1935	6,417	384	2,998	434	53	450	2,098	(X)	9.3%	49.6%
1940	8,766	1,218	3,599	682	81	535	2,647	4	9.2	47.4
1945	8,800	1,419	1,031	2,331	100	892	3,018	10	4.2	8.3
1950	23,008	4,873	2,496	2,087	453	6,381	6,698	14	8.7	36.5
1955	32,317	9,854	3,003	3,054	647	4,370	11,299	89	8.5	31.9
1960	52,380	19,295	4,010	4,455	1,242	5,106	18,004	177	10.6	37.6
1963	66,790	25,570	5,275	5,596	1,751	5,585	22,767	247	11.6	39.6
1965	77,726	28,098	6,259	6,651	2,703	5,979	27,726	309	12.0	42.3
FEDERAL										
1935	3,108	99	2,374	50	2	450	133	(X)	4.5	49.3
1940	3,472	355	2,246	160	10	535	162	4	3.7	38.1
1945	4,091	760	420	1,776	72	892	161	10	1.9	4.3
1955	14,223	6,405	1,504	1,174	246	4,308	522	75	3.7	20.7
1960	24,726	14,298	2,117	1,749	410	4,994	1,015	144	5.0	26.9
1963	32,034	19,396	2,979	2,442	550	5,565	1,812	192	5.7	29.7
1965	39,960	21,850	3,585	3,056	1,258	5,961	4,016	234	6.2	33.6
STATE AND LOCAL										
1935	3,309	285	624	384	51	(X)	1,965	(X)	4.8	47.9
1940	5,294	863	1,353	522	72	(X)	2,485	(X)	5.6	56.8
1950	13,008	2,845	1,393	1,501	290	462	6,518	(X)	4.9	61.2
1960	27,653	4,997	1,984	2,706	832	112	16,989	33	5.6	59.9
1965	37,766	6,248	2,674	3,596	1,445	18	23,710	76	5.8	59.3

X. Not applicable.

[†] Although total social welfare and social insurance expenditures include non-Federal workmen's compensation benefits payable under law by employers and private insurance carriers, such expenditures and that part of temporary disability insurance payments made through private carriers have been omitted in computing percentages relating to all government expenditures.

Source: Dept. of Health, Education and Welfare, Social Security ADministratiion, Social Security Bulletin. Oct. 1965.

Table 4

THE IMPACT OF GOVERNMENT TAXING AND TRANSFER PROGRAMS ON INCOME DISTRIBUTION, UNITED STATES, 1950

Money Income class (based on Initial Income)	Distribution of spending units	Initial Income		Final Income Adjusted for Taxes, Transfers, and Government Services	
	(Percent)	Billions	Percent	Billions	Percent
Less than $1,000	14	2.804	1.43	9.736	5.0
$1,000-1,999	19	16.188	8.23	21.860	11.3
$2,000-2,999	21	28.466	14.47	31.734	16.4
$3,000-3,999	19	33.750	17.16	34.790	18.0
$4,000-4,999	11	27.438	13.95	26.211	13.6
$5,000-7,499	11	36,370	18.49	33.968	17.6
$7500-add over	5	51.687	26.28	34.747	18.0
TOTAL	100	196.703	100.00	193.046	100.00

Source: Alfred H. Conrad, "Redistribution Through Government Budgets in the United States, 1950," in Alan T. Peacock, (ed.) Income Redistribution and Social Policy (London: Jonathan Cape, 1954), pp. 178-268.

Also in: Lloyd G. Reynold, Economics, p. 436, table 3

Social Insurance. Social insurance programs include the Federal Old-Age Survivors and Disability Insurance (OASDI) System and unemployment insurance. The biggest of the two programs in OASDI (frequently referred to as "Social Security") which is national in scope, with the same rules and formulas applying throughout the country. Roughly one-third of the OASDI benefits ($18 billion in 1965) went to the poor and another two-fifths went to households which otherwise would have been poor.[1]

Unemployment insurance is a joint federal-state activity. The federal government administers the program and collects the taxes, but most decisions about the levels of benefits, criteria for eligibility, and to some degree the payroll tax rates are left to the discretion of the states.

There are a number of shortcomings in our present social insurance system. Although the social insurance programs have been liberalized from time to time with respect to coverage and level of benefits,[2] large categories of workers are still excluded, and the level of benefits is frequently inadequate. For example, minimum benefits are still so low that nearly two-fifths of all aged remain poor despite OASDI. In addition, unemployment insurance benefits can be received for only a limited time period, and, therefore, the program does not provide for those who suffer from long-term unemployment.

Public Assistance. The major income maintenance program aimed directly at the poor is public assistance. Expenditures under this program totalled nearly $7 billion in fiscal year 1966.[3] Public assistance programs are administered jointly with the State and Federal governments, with the State paying 41 percent of the costs and establishing standards of eligibility.

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[1] Economic Report of the President, 1967, p. 140.

[2] The social insurance programs are abased on the Social Security Act of 1935.

[3] Included in these expenditures were Food Stamps and Commodity Distribution. Economic Report of the President, 1967.

Four categories of aid have been established under the public assistance programs: (1) aid to the aged; (2) aid to the families with dependent children; (3) aid to the blind; and (4) aid to the disabled. Although these categories cover a large segment of the poor, they leave important gaps in our income maintenance system. For example, only about one-quarter of the nation's poor citizens qualify for welfare aid; 12 million children in families earning less that $3,100 a year receive no benefits.[1] Why is the gap so large? There are a number of reasons: (1) families suffering from chronic unemployment are ineligible for public assistance in many states; (2) there are only limited provisions against loss of earning power due to temporary disability; (3) there are still many individuals who receive little help because they do not know how to seek it or who are poor for such reasons as mental illness, alcoholism, or drug addiction; (4) there are also great variations in the intensity of effort with which communities search out the people who need help; (5) most importantly, they exclude people in families headed by workers who have jobs, even though their earnings yield an income too low to lift the family out of poverty.

Public assistance has other weaknesses as well. Such a program should provide benefits on the basis of needs while preserving incentives for self help. Actually, most public assistance programs fail on these counts. First, to determine need there are means tests, detailed regulations and invasions of privacy and surveillance. Second, some states have established low standards of need and they have imposed stringent requirements relating to the length of residence, other income and assets and relatives' responsibility. For example, seven states provide a mother and three children less than $120 a month to live on--a situation which actually perpetuates poverty. Only 17 states, including New York, Connecticut, and New Jersey, pay 100 percent of their own standards for needy families. Alabama, Alaska, Florida, and Mississippi all pay less than 40 percent.[1]

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[1] National Commission on Technology, Automation, and Economic Progress, Technology and the American Economy (Washington D.C.: Government Printing Office, 1966)

Third, some of those who receive aid may be discouraged from helping themselves since assistance payments are frequently reduced one dollar for every dollar of earnings. The rule disqualifying a family from receiving aid if the head of the household is an able-bodied male--even if unemployed--may promote family dissolution.[2] In states imposing such rulings, a man unable to provide adequately for his wife and children can make them eligible for aid to families with dependent children only by deserting them.

Other problems with public assistance also exist. Social workers are assigned to each case to promote restoration of the welfare client to a productive life where possible, to bring his family in contact with available social services, and to help improve living conditions. Because of the problems of administration, the social workers are largely responsible for certifying "need" and establishing "eligibility" of clients and have little time to provide the professional services to the poor families.

Social Service. Public services such as medical care, urban renewal, and housing which primarily benefit the poor have proved to be controversial issues. Until recently such social services have been provided on only a limited basis. The passage of the medicare program in 1965 marked a breakthrough in the expansion of such services. What is more, it inaugurates the beginning of social insurance financed out of general tax revenues rather than from payroll taxes on the recipient's income.

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[1] Wall Street Journal, March 29, 1967, p. 1.

[2] The Unemployed Parent Program under AFDC, introduced in 1962 and now in operation in 21 states, attempts to eliminate this situation in the Public Assistance system.

DESIGNING A PROGRAM TO ELIMINATE POVERTY

The elimination of poverty is a major concern of public policy makers today. The problem is considerable and seemingly impossible to solve. The readings accompanying this chapter provide descriptions and assessments of various proposals. We invite you to try to use these text chapters and the readings to develop your own recommendations about whether or not or how to deal with poverty.

In making up your program remember that to eliminate poverty you must consider both short-run and long-run solutions. Certain programs may be effective in eliminating poverty now, but they will not affect the causes of poverty; they will not change the structure of the society so that poverty will disappear. In developing programs, you should also keep in mind the reasons people are poor. There is probably no one program which will wipe away all poor people forever. Different people are poor for different reasons, so the program will have to be geared to get at these different causes of poverty. Finally, when you have finished your try at social engineering, it would be well to sit back and look over your brain child. Along with its impact on poverty, what other effects will it have on U.S. society?

APPENDIX

Note to Appendix

The preceding statistical tables on poverty attempt to identify the poor by comparing the percentage of poor families in a certain group with the percentage of all families in that group. We find out who the poor are by observing whether male or female, white or nonwhite family heads are more prevalent among poor families than among all families.

Another way to identify the poor and analyze the causes of poverty is to determine the "incidence" of poverty. The incidence of poverty for any specified group of families is the percentage of that group with incomes below $3,000. For all families, the incidence in 1964 was around 18%. An incidence of a particular group higher than 18%, or higher than the rates for other similar groups, suggests that some characteristics of that group are causally related to poverty. The basic cause may not be the particular characteristic used to classify the group. But an examination of groups with high incidence should throw light on the roots of poverty.

An example from one of the following tables will illustrate the usefulness of this kind of data. In Table A you will note that the incidence of poverty among nonwhite families is 37.3%. This means that 37.3% of nonwhite families receive an income under $3,000. This is higher than the general incidence of poverty (18%), and it is higher than the incidence of poverty among white families (15.4%). Therefore, we should study nonwhite families to find out what conditions tend to make a larger percent of them poor.

Table A

INCIDENCE OF POVERTY BY EDUCATION, COLOR, AND RESIDENCE, 1964*

Selected Characteristic	Incidence of Poverty (Percent)
All families	18.0
Education of Head	
8 years or less	33.0
9-11 years	17.3
12 years	9.1
More than 12 years	5.6
Color of Family	
White	15.4
Nonwhite	37.3
Residence of Family	
Farm	
White	39.0
Nonwhite	80.1
Non-farm	
White	13.6
Nonwhite	34.8

*Note: Data relate to families and exclude unrelated individuals. Poverty is defined to include all families with total income of less than $3,000; these are also referred to as poor families. The incidence of poverty is measured by the percent of poor families with a given characteristic of all families having the same characteristic.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Consumer Income, Series P-60, No. 47, September 24, 1965.

Table B

INCIDENCE OF POVERTY, BY CHARACTERISTICS RELATING TO LABOR FORCE PARTICIPATION, 1964*

Selected Characteristics	Incidence of Poverty (Percent)
All families	18.0
Earners in Family	
None	72.3
One	18.5
Two	8.9
Three or More	5.0
Labor Force Status of Head	
Not in Civilian Labor Force	47.3
Unemployed	27.6
Employed	10.3
Age of Head	
14-24 years	24.7
25-54 years	11.1
55-64 years	17.9
65 years and over	43.6
Sex of Head	
Male	14.5
With Wife in Labor Force	6.7
Female	43.7

*Note: Data relate to families and exclude unrelated individuals. Poverty is defined to include all families with total money income of less than $3,000; these are also referred to as poor families.

Incidence of poverty is measured by the percent poor families with a given characteristic of all families having the same characteristic.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Consumer Income, Series P-60, No. 47, September 24, 1965.

Table C

INCIDENCE OF POVERTY BY OCCUPATION OF FAMILY HEAD, 1963*

Occupation of Family Head	Incidence of Poverty (Percent)
Total employed	11.2
Professional, technical, and kindred workers	3.2
Self-employed	4.6
Salaried	2.8
Farmers and farm managers	47.7
Managers, officials, and proprietors, excluding farm	5.9
Self-employed	11.4
Salaried	1.8
Clerical and kindred workers	5.1
Sales workers	5.4
Craftsmen, foremen, and kindred workers	5.0
Operatives and kindred workers	9.5
Service workers, excluding private household	17.8
Private household workers	69.0
Farm laborers and foremen	64.8
Laborers, excluding farm and mine workers	24.4

*Note: Data relate to families and exclude unrelated individuals. Poverty is defined to include all families with total money income of less than $3,000; these are also referred to as poor families.

Incidence of poverty is measured by the percent poor families with a given characteristic are of all families having the same characteristic.

Source: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Consumer Income, Series P-60, No. 45, "Low-Income Families and Unrelated Individuals in the United States, 1963," (Washington D.C.: U.S. Government Printing Office, June 18, 1965), p. 11.

Table D

NUMBER OF HOUSEHOLDS AND INCIDENCE OF POVERTY OF POOR FAMILIES WITH CHILDREN UNDER AGE 18, BY SEX OF HEAD, FARM-NONFARM RESIDENCE, AND BY RACE, 1964*

Selected Characteristics	Number of Households (in millions)	Incidence of Poverty (percent)
By Total Families	4.5	16.0
1-2 children	1.8	10.8
3-4 children	1.5	18.8
5 children or more	1.1	41.1
By Sex of Head		
Male:		
1-2 children	1.2	7.8
3-4 children	1.0	13.8
5 children or more	.9	35.2
Female:		
1-2 children	.6	36.1
3-4 children	.5	68.6
5 children or more	.3	83.8
By Residences		
Nonfarm:		
1-2 children	1.6	9.9
3-4 children	1.3	17.4
5 children or more	1.0	39.2
Farm:		
1-2 children	.2	25.8
3-4 children	.2	38.8
5 children or more	.2	52.4
By Color		
White:		
1-2 children	1.3	8.6
3-4 children	1.1	14.4
5 children or more	.6	29.4
Nonwhite:		
1-2 children	.5	32.1
3-4 children	.5	54.4
5 children or more	.5	76.1

*Note: In this table poverty is defined by the Social Security Administration's new poverty-income standard; it takes into account family size, composition, and place of residence.

Source: Mollie Orshansky, "Recounting the Poor--A Five-Year Review," Social Security Bulletin, Vol. 29, No. 4, April 1966, pp. 24-25.

Table E

NUMBER OF POOR FAMILIES AND INCIDENCE OF POVERTY, 1947-1965*

Year	No. of Poor (millions)	Incidence of Poverty (percent)
1947	11.2	30.0
1948	12.0	31.2
1949	12.7	32.3
1950	11.9	29.9
1951	11.3	27.8
1952	10.7	26.3
1953	10.1	24.6
1954	11.0	26.2
1955	10.1	23.6
1956	9.4	21.5
1957	9.5	21.7
1958	9.6	21.8
1959	9.3	20.6
1960	9.2	20.3
1961	9.3	20.1
1962	8.9	18.9
1963	8.5	18.0
1964	8.2	17.1
1965	8.0	16.5

*Note: Poverty is defined to include all families with total money income of less than $3,000 in 1965 prices; these are also referred to as poor families. Incidence of poverty is measured by the percent that poor families are of all families.

Source: Economic Report of the President, 1967, p. 237.

Table F

SELECTED CHARACTERISTICS OF FAMILIES IN INCOME DECILES, 1964
(in percentages)

Percent of Families	Lowest Tenth	Second and Third	Fourth and Fifth	Sixth and Seventh	Eighth and Ninth	Top Tenth	TOTAL
Having college education	9%	12%	15%	24%	35%	57%	100%
Living in suburbs	12	16	23	30	43	50	100
1964 income higher than 1963 income	15	26	43	60	63	63	100
Husband-wife families	33	58	77	86	90	90	100
Two or more major earners[a]	1	9	23	38	56	49	100
Head retired, housewife, student	63	44	15	6	5	8	100
Head having worked less than 40 wks	26	16	11	7	5	5	100
Nonwhite	23	18	11	6	5	1	100
Percent of total money income before taxes	1	7	14	20	28	30	100
Median total income[b]	$1080	$2840	$5200	$7500	$10670	$17800	
Number of families in survey	357	712	713	713	712	356	

[a] Median amounts rounded to nearest ten dollars.

[b] A major earner is defined as having received at least $600 earned income in 1964.

Source: University of Michigan, Institute for Social Research Survey Research Center, 1965 Survey of Consumer Finances (Ann Arbor, Mich.: Ann Arbor Press, 1966), p. 21.

ECON 12

UNIT II

READINGS

Unit II
Lesson 8

Reading No. I

THE MARKET STRUCTURE OF THE ALUMINUM INDUSTRY

I. TECHNOLOGY

Stages of Production

The aluminum industry can be divided into five subindustries, one for each stage of production. (See Figure I in appendix). Each stage of production uses a distinct technology and usually a plant in a separate geographic location. Producers who engage in three to five stages of aluminum production are called integrated firms. Those who participate in only one or two stages of fabricated aluminum are called independent producers.

Stage I of aluminum production involves the mining and processing of two ores: bauxite, the principal aluminum ore, and flourspar, a chemical compound essential in the reduction of aluminum. Bauxite mining, however, is the major operation. Today the bulk of United States bauxite requirements is obtained from American owned low-cost deposits in Jamaica, Surinam, and British Guiana. Some low-grade bauxite is also obtained from mines in Arkansas. United States producers are developing new sources in Australia and Ghana where extensive high quality ore reserves have recently been discovered. United States producers own and operate their own shipping service for transporting bauxite and flourspar ores from abroad to the processing plants in the United States.

Stage 2 of aluminum production involves the refining of bauxite into the mineral compound aluminum oxide, commonly called alumina.[1] The alumina plants are mostly located near the coastal ports of the Gulf of Mexico where the bulk of imported bauxite ores is shipped. In addition to refining bauxite ore, alumina plants also manufacture other raw materials essential for the production of primary aluminum. Thus alumina plants process and manufacture almost all the chemical products needed for the production of aluminum metal.

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[1] The special chemical process to extract alumina from bauxite was discovered by the German chemist, Karl Josef Bayer, in 1889.

In Stage 3 of production, dissolved alumina is reduced or smelted by an electrolytic process into the primary metal aluminum.[2] The large quantities of electric power required to produce aluminum (15,000 to 17,000 kilowatt hours for one ton of aluminum) originally required the location of aluminum plants near sources of low-cost hydroelectric power in the Pacific Northwest and Tennessee Valley. However, the increasing efficiency of thermal power plants has resulted in the construction of coal-powered reduction plants located largely in the Ohio Valley and in Texas. Today approximately forty-five percent of the United States smelter capacity is based on hydroelectric power, thirty-four percent on coal, and twenty-one percent on gas.[3]

In Stage 4, aluminum ingot is fabricated into relatively standardized wrought products in either semi-finished or final form. About three-quarters of the primary aluminum metal is processed into so-called mill-end products consisting of sheet and plate extrusions,[4] rod and bar, wire and cable, foil, tubing, forgings, and powder. Most of the remainder is used in castings, and a relatively small portion goes into alloying and steel deoxidizing.

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[2] This process was developed by the American chemist, Charles M. Hall in 1886. Except for substantial improvements in equipment and for the size of the units employed, the Hall process in use today is basically the same as when developed some 80 years ago.

[3] U.S. Department of Commerce, Aluminum Factbook (Washington, D.C.: U.S. Government Printing Office, 1963), p. 21.

[4] Extruding consists of forcing aluminum ingot through a die that has an opening similar to the finished shape. This operation is analogous to forcing toothpaste through a tube. Numerous industrial products are made by extruding as well as consumer items such as doors and storm windows.

In Stage 5, aluminum mill products are processed further into almost every conceivable type of consumer-end products. Typical examples of end-use fabricationa are building materials, automobile and aircraft components, household appliances, packaging and containers and electric products such as wire and cable.

In 1965, there were only eight integrated producers in the aluminum industry. Four of the eight were fully integrated firms engaged in all five stages of production. The remaining four were partially integrated firms engaged in Stages 3, 4, and 5, i.e., reduction of alumina into primary aluminum and fabrication of aluminum metal into semi-finished and finished forms. (See Figure 2 in Appendix).

Vertical integration, even partial, offers a company a number of advantages over those who are independent fabricators. First, it guarantees the integrated firm an adequate supply of aluminum metal for its fabricating needs (probably at a lower cost than if it were a buyer). Second, it provides a captive market through its own fabricating plants for increased sales of aluminum metal. Third, it gives the integrated firm a broader earnings base when profit margins are low on fabricated products compared with primary metal.

II. SELLER CONCENTRATION

Up to World War II, the United States aluminum industry consisted almost entirely of the Aluminum Company of America, commonly called Alcoa. By 1965, seven new firms had entered the industry. These included: Reynolds Metal Company and Kaiser Aluminum Company which joined in the 1940's; Ormet, Anaconda Aluminum, and Harvey Aluminum which entered in the 1950's; and Consolidated Aluminum Company (CONALCO) and Intalco Aluminum Company, which joined the industry in the 1960's.[5]

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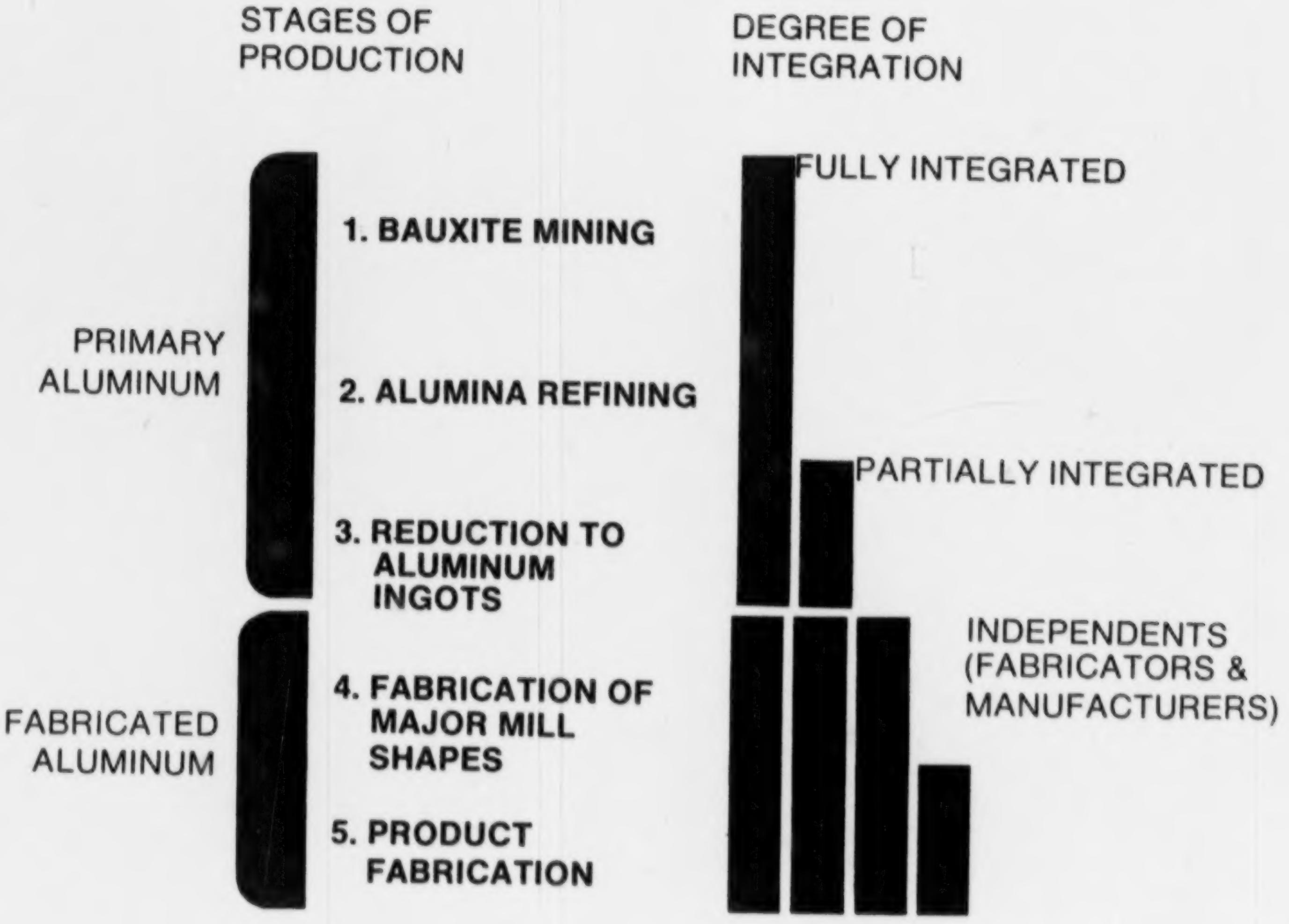
[5] Ormet is jointly owned by Olin Mathieson and Revere Copper and Brass; Anaconda is owned by Anaconda Copper; Harvey is a Los Angeles aluminum fabricator.

1 Aluminum Industry Structure


STAGES OF PRODUCTION
DEGREE OF INTEGRATION
PRIMARY ALUMINUM
1. BAUXITE MINING
2. ALUMINA REFINING
3. REDUCTION TO ALUMINUM INGOTS
FABRICATED ALUMINUM
4. FABRICATION OF MAJOR MILL SHAPES
5. PRODUCT FABRICATION
FULLY INTEGRATED
PARTIALLY INTEGRATED
INDEPENDENTS (FABRICATORS & MANUFACTURERS)

Several others were rumored to join the industry in the second half of the 1960's.

Credit for the break-up of Alcoa's monopoly position goes largely to the United States Government, which fostered new entry into the industry in two important ways: (1) disposal of its World War II aluminum plants at low cost to two aluminum fabricators, Reynolds Metal Company and Kaiser Aluminum Company, and (2) generous financial assistance to new entrants through government loans, tax incentives, accelerated write-offs and profitable orders.

The three largest producers of the aluminum industry are Alcoa, Reynolds, and Kaiser. Because of their dominance, they are referred to as the "Big Three." They are fully integrated firms engaged in all five stages of production. The "Little Three" consist of Anaconda, Harvey, and Ormet, all of whom started out in the fabricating end of aluminum production. Only Ormet is completely integrated, although a relatively small producer compared to the Big Three. (See Figure 2 in appendix).

Stage 1 Seller Concentration.

Seller concentration in the aluminum industry varies with the stages of production. In 1964 only the Big Three and Ormet were involved in the first stage of production. The Big Three own or control extensive deposits of bauxite both in the United States and abroad. Ormet, the smallest producer, does not presently own its own mines but purchases its bauxite supplies in Dutch Guiana on a long-term lease from foreign owners. Figures are not currently available on the relative size of each firm's bauxite holdings. Reynolds, however, reports it presently has sufficient bauxite supplies for its own use for at least 40 years at the current operation level.

Stage 2 Seller Concentration.

In 1964, only the Big Three and Ormet were engaged in this stage of production. In 1964, there were eight domestic alumina plants; three were owned by Alcoa, two each by Reynolds and Kaiser, and one by Ormet. The percentage share of domestic alumina plant capacity in 1963 was as follows: Alcoa, 37.3 percent;

Reynolds, 31.9 percent; Kaiser, 24.3 percent; and Ormet 6.5 percent (Figure 4 in appendix). In addition to its domestic alumina plants, Alcoa also own two plants in Australia and Surinam. A number of foreign-based alumina plants are being planned or are under construction abroad by other integrated producers.

Most of the alumina output of the Big Three is produced for their own aluminum reduction plants; a part, however, is sold to the partially integrated firms for use in the latter's reduction facilities. Ormet, however, produces alumina only for its own reduction plants.

Stage 3 Seller Concentration.

All eight integrated producers are engaged in the reduction of primary aluminum. The changes in market shares of the Big Three primary producers and the Little Four for selected years, 1940-1964, are shown in Figure 3 in the appendix. Until 1958, the Big Three produced 100 percent of the primary aluminum output. With the entry of four new firms between 1958-1964, the Big Three's share of the market was reduced to 83 percent. In 1964, the fully integrated producers had 92 percent of the industry output, and the partially integrated producers had 8 percent of the industry production.

The Big Three produce aluminum metal both for their own fabricating plants and for general sale to the independent fabricators. The smaller firms produce aluminum metal mainly for their own fabricating plants, rather than for general sale.

Competing Sources of Supply: Stage 3.

In addition to the output of domestic primary producers of aluminum, there are three other sources of supply of aluminum metal: (1) imports from foreign primary producers; (2) secondary smelters of aluminum metal; and (3) the U.S. government stockpile of aluminum metal (Figure 5 in appendix).

Foreign imports constitute approximately 12.5 percent of the U.S. ingot supply, having grown by 2.5 percent since 1958. Almost two-thirds of these shipments have come from Aluminium Limited in Canada, with the remainder from some dozen countries including Norway, France, and Japan. Most of the primary metal imports is sold to the non-integrated fabricators, but some is sold to primary producers under long-term contract.

The most important foreign competitor of the United States primary producers is Canada's Aluminium Limited.[6] She is today the world's largest producer and exporter of aluminum metal. Because of lower costs, she can absorb the American tariff and still maintain a delivered price competitive with our domestic producers. Limited is now experimenting with a radically new process of producing aluminum directly from bauxite without first converting it into salt-like alumina. If successful, that process should cut her production costs by 25 percent.[7]

Another source of aluminum metal is secondary aluminum produced by smelters from both new and used aluminum scrap. In 1964, secondary smelters provided 15.5 percent of the total domestic supply of aluminum metal. There are some 92 secondary smelting plants, but the industry is dominated by three leading firms, American Metal Climax (Apex Smelting), American Smelting and Refining, and United States Reduction.

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[6] Aluminium Limited was originally organized as a subsidiary of Alcoa to handle the latter's foreign holdings in Canada and Europe. Although the two companies were legally independent, the same eleven controlling stockholders held about half the common stock in each company. In 1951, the federal court ordered Alcoa to divest itself of its stock holdings in Limited in order to promote greater competition within the aluminum industry. To comply with this order, the major stockholders of both Limited and Alcoa were forced to sell their interest in one or the other company. Since then Limited has become an important competitor of Alcoa's and the latter's prime interest has been to block its Canadian rival from winning more of the United States market.

[7] Limited also prides itself in having the world's biggest aluminum smelter, the biggest hydroelectric project, and the biggest bauxite production. Its plants span 30 countries from Japan to Africa, and it exports to more than 100 foreign nations. Since Canada can use only 15 percent of its output, it has to sell the rest of it to the world. See "Aluminium Unlimited," Time, March 22, 1963, pp. 9-92.

Since secondary aluminum does not meet the purity specifications of primary aluminum, it is an inferior substitute for primary aluminum in most applications. However, the alloy impurities of secondary aluminum do not impair its use for aluminum castings. Hence, foundries and die casters are the principal customers of secondary smelters.

In recent years, a new competing source of primary aluminum has been the United States Government's surplus stockpile of aluminum which amounted to 1.4 million tons in November, 1965. This surplus is equivalent to approximately a half year's output of the primary producers. The government has the power to sell this surplus in the open market and could, if it wished, affect the supply conditions of primary aluminum.[8] To assure an orderly disposition of this surplus, the industry recently negotiated an agreement with the government to reduce the stockpile by requiring defense contractors to buy a pound of aluminum from the government for each pound of aluminum contained in the final defense product. Sales of aluminum for the government stockpile will be made at the producer's published price.[9]

Stages 4 and 5 Seller Concentration

In these last two stages (where aluminum metal is fabricated into semi-finished and finished products) the structure of the industry changes, with a competitive fringe existing around the oligopoly core in some product lines. In 1965 there were approximately 200 domestic fabricating companies making mill products from primary aluminum ingot. In 1955 (the latest figures) there were some 3,000 fabricators of castings made principally from scrap or secondary aluminum, and approximately 14,000 end-product fabricators.

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[8] In 1950 the government initiated a program for building of a 2 million ton aluminum stockpile in anticipation of another five-year "conventional war." In 1958 and again in 1963, this stockpile figure was revised downward following the reduction of the estimated duration of such a war from five to three years. The 1965 stockpile requirement was 450,000 tons. Wall Street Journal. Nov. 19, 1965, p. 10.

[9] N.Y. Times, Nov. 17, 1965, p. 65.

Despite the large number of competitors, in 1958 the six integrated producers were still the leading companies in aluminum fabrication, accounting for over three-fifths of the tonnage sales of fabricated and semi-fabricated products. However, they were not equally important in all areas of aluminum fabrication. They were most heavily concentrated in the fabrication of aluminum mill products, moderately concentrated in castings, and relatively unimportant in most end-product application. (See Table I below)

Competition in the fabricated aluminum industry has been especially fierce in recent years because of the large increase in new firms in the 1950's. Intense competition has contributed to two major changes in the structure of the fabricated aluminum industry. First, independent fabricators have succeeded in increasing their share of mill-end shapes, which constitute three-quarters of total aluminum consumption and which was previously preempted by the integrated firms. Second, the integrated fabricators have made several inroads in the independents' share of the casting market.[10]

III PRODUCT DIFFERENTIATION

Except for end-product applications, the aluminum industry has little if any product differentiation. Primary aluminum and fabricated products are standardized according to grades and forms. Producers attempt to differentiate their products from those of their rivals by such fringe attractions as promptness in filling orders, technical service, assistance to buyers, or personal sales representatives. Nevertheless, the independent fabricators tend to buy from several sources of supply provided they are all the same price.

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[10] "Aluminum: A Study in Rollback Economies." Fortune, February, 1966, p. 107.

Some advertising of fabricated products exists to keep the public informed about new developments as well as to identify the product to the consumer. In general, advertising outlays are relatively modest since they cannot be expected to increase the market shares of individual sellers when the product is undifferentiated. Even with respect to some aluminum end products which are differentiated, advertising is considered less important than for such highly differentiated products as cigarettes and automobiles.

IV. BARRIERS TO ENTRY

A. PRIMARY PRODUCERS (STAGES I-3)

Primary producers face three major kinds of barriers to entry in the aluminum industry: scale economies, capital requirements, and absolute cost disadvantages. Since these barriers differ with each stage of production (I-3), they will be considered by separate stages below.

Scale Economies

Stage I. The open-strip mining of bauxite requires a relatively small operation, so that entry would normally be relatively easy. However, since most available deposits are now in underdeveloped countries, the opening up of such deposits requires large expenditures for construction of port facilities and railroads, which are economically feasible only for large-scale projects. For example, in 1963, Kaiser began the development of bauxite properties near the northern coast of Jamaica. This involved a five-year capital investment program costing approximately thirty million dollars.

Stage 2. Alumina plants require medium-sized economies of scale. The eight domestic alumina plants in existence in 1963 each had between 6.5 percent and 18.7 percent of the industry's capacity. (Figure 4 in appendix) The smallest plant was owned by Ormet, with 6.5 percent of the total alumina capacity; the largest plant, by Alcoa with 18.7 percent of the industry's capacity. It would appear that 6.5 percent of the industry's capacity is a rough approximation of the minumum-sized alumina plant which can operate efficiently.

Stage 3. Production in this stage formerly required very large-scale plants because of the need to construct private hydroelectric plants to generate power for aluminum reduction plants. After World War II, however, this barrier to entry was considerably reduced with the development of relatively low cost thermal power plants. Since one steam plant can efficiently supply one reduction plant with electric power, large-scale electric power plants are no longer required for the generation of electic energy.

Aside from the generation of power, the reduction process itself requires relatively small economies of scale since the process is carried out in numerous discrete production units called electric pots or cells. Only a very small percentage of the industry's capacity suffices to realize fully the technological economies of a single reduction plant: The Anaconda plant in Montana, for example, was reported to be an extremely efficient plant, although it had only 3 percent of the industry's capacity.

TABLE I

MARKET CONCENTRATION STAGES 4 AND 5

Market share by Integrated and Nonintegrated Producers
of Major Fabricated Aluminum Products, 1958

Type of Fabricated Product	Integrated Producers		Independent Producers	Total Net Shipments
	No. of Producers	Percent of Total Shipments	No. of Producers	In Thousands of Net Tons
Major Mill Shapes	6		160 (1959)	
Sheet and Plate		90.5		676.5
Foil		78.8		n.a
Wire and Cable		76.7		172.9
Extrusions		44.5		410.0
Castings [1]	1	9.0	3,000 (1955)	320.9
End Products	6	5.4	14,000	n.a

1. Until 1955, castings were made almost exclusively by independent foundries and diecasters from secondary aluminum metal. Since 1955, the major auto companies have been producing castings for their auto parts in their own "captive shops." Instead of using secondary metal, which normally sells at a lower price than primary, they purchase molten primary metal directly from the major aluminum producers at discount prices. Because of the cost advantages to the auto firms, captive shops using primary metal have shown more growth in recent years then the independent fabricators.

Source: Walter Adams, ed. The Structure of American Industry (New York; The Macmillan Co.) pp. 206-7; Standard and Poor's Industry Surveys, Vol. II, pp. 1796-97.

Capital Requirements

Aluminum is a high capital-cost industry. However, the size of the capital requirements in the aluminum industry again depends upon the degree of vertical integration. If entry into aluminum reduction alone is considered, the cost of an efficiently-sized smelter is estimated at about $900 per ton of annual capacity or roughly two dollars of investment for each dollar of sales.[11] However, the new 73,000 ton capacity smelter which Intalco was building in 1965 near Bellingham, Washington, amounted to roughly $1100 per ton of annual capacity.

Capital requirements for a fully integrated primary producer with bauxite deposits, alumina plants, shipping fleet, electric power and auxiliary facilities are estimated at somewhere between $1500 and $2000 per ton of reduction capacity.[12] These figures do not include investment in rolling mills and other fabricating units needed to market aluminum successfully. Ormet's integrated facilities for Stages 1-3, for example, built in the 1950's was reported to cost $224 million plus an additional $17.5 million in initial working capital. This amounted approximately to $1200 per ton of annual capacity. To finance the project, Ormet borrowed $100 million from ten banks and in addition sold $100 million first mortgage notes to a group of institutional investors. The balance of the funds was provided by Olin Mathieson Chemical Corporation and Revere Copper and Brass, Inc., joint owners of the company.

Cost Disadvantages of New Firms

The final barrier to entry arises from certain cost advantages which long established plants have over new entrants. This stems in part from the inflation of construction costs since the 1950's and in part from the availability of cheap hydroelectric power sites for the older capacity. The newer plants utilize steam-generated power which is still more costly to supply than cheap hydroelectric power. A further factor was generous assistance of the federal government to the older capacity in the 1940's and 1950's. For example, the government's policy of accelerated amortization during World War II enabled Alcoa to depreciate fully much of its then existing capacity. Two of the primary producers, Reynolds and Kaiser, obtained considerable plant capacity from the federal government at the end of World War II at about one-third of the original cost. Similarly the 1950-55 expansion of primary reduction capacity was supported by generous government assistance to new entrants through tax incentives, accelerated write-offs, and profitable orders. At present, there are no comparable financial advantages to encourage entry.

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[11] Standard and Poor's Industry Surveys, Vol. II, Sept. 23, 1965, p. M 90.

[12] Ibid.

On the other hand, absolute cost barriers are not so substantial as to preclude entry. In the early history of the Industry, Alcoa derived its monopoly power from its control of the Hall patents in the reduction of aluminum. Today, however, the basic process is unpatented and sufficient know-how is publicly available.[13] In addition, raw materials essential to aluminum production are not completely controlled by existing firms.

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[13] The process has been unpatented since the end of World War II, when the government sold its wartime aluminum plants to Kaiser and Reynolds. Since Alcoa completely controlled all the patents connected with aluminum production, the new companies could not start operations until some agreement had been reached with Alcoa on the use of her patents. After long negotiations, Alcoa finally agreed that all patents covering basic aluminum production processes would be turned over to the new companies outright; all other patents would be licensed to the new companies and royalties would be collected by Alcoa. (See U.S. Dept. of Commerce Business and Defense Service Administration, Materials Survey: Aluminum, (Washington, D.C.: Government Printing Office, 1956) VII, p. 20.

B. INDEPENDENT FABRICATORS (STAGES 4-5)

Entry as an independent fabricator is easy compared to entry into primary aluminum production. The technology of most aluminum fabrication is such that the industry can support a rather large number of relatively small firms without loss of efficiency. Only in the fabrication of aluminum sheet metal are the economies of scale significant. Capital requiremnts are also nominal in aluminum fabrication, with the exception of rolling mills for aluminum sheet production. For example, Alcoa's rolling mill at Davenport, Iowa, built in the 1950's, cost $35 million as compared to $200,000 for a minimum-sized economical foundry, or $25,000 for a simple extrusion press. There is some product differentiation in aluminum end-use products, but most aluminum fabrications, such as mill-end shapes, are fairly well standardized.

Independent fabricators face a number of absolute cost disadvantages as compared with the integrated firms. Foremost, they are subject to price squeezes by integrated producers, who can reduce the spread between the ingot price and the fabricated product price. Since many fabricated lines are produced by small and financially weak firms, a price squeeze hurts the independents by forcing them to operate on very low profit margins. Second, independent firms are usually at a selling disadvantage since they are not able to match the large-scale marketing expenditures undertaken by integrated firms to sell new applications of aluminum. Finally, in periods of peak demand, if primary producers tend to supply their own fabricating needs first, the non-integrated firms are forced to purchase secondary aluminum, an inferior substitute metal, at premium prices. However, the reduced tariff on aluminum ingot since 1958 has made imports of primary aluminum a ready source of supply for the independent fabricators. The latter are now, therefore, no longer as dependent on the supplies of the domestic primary producers.[14]

V. GROWTH OF DEMAND SINCE WORLD WAR II

The primary aluminum industry (Stages 1, 2, and 3) has been among the fastest growing in the nation's economy, experiencing a 73 percent increase in consumption udring the years 1950-1964. (Figure 6 in appendix)

What are the factors responsible for aluminum's fast growth rate? Among the more important are: (1) aluminum's unique physical properties of light weight, corrosion resistance and conductivity; (2) its low cost relative to other nonferrous metals and materials; (3) the industry's aggressive research and products program to develop new uses for aluminum; (4) the industry's pricing policies to promote new end-product uses; and (5) the metal's expanding use in defense and space requirements of the federal government.

Figure 7 in the appendix shows the changing pattern of aluminum consumption in various uses for the years 1948 and 1964. The fastest growth in aluminum consumption has been in container packaging and electric wire and cable. However, both of these uses still constitute a small percentage of total aluminum consumption compared with the building and transporation industries. Growth in the latter industries has been considerable and today they consume nearly one-quarter of all the aluminum used in this country.

The large expansion in the consumption of aluminum has been largely at the expense of competing metals and materials. In the building-construction industry, aluminum has displaced wood in such construction application as roofing, siding, doors, frames, and windows. In the construction of transportation vehicles, such as passenger cars, railroad freight cars, mass transit vehicles, and light-weight, mobile military equipment aluminum has made steady gains as a substitute for steel. (For example, the 1964 passenger car contained 72 pounds of aluminum as contained 72 pounds of aluminum as compared with 30 pounds in 1955.) The doubling of aluminum's use in electric wire and cable since 1948 has been mostly at the expense of copper. The expanding use of aluminum for metal containers in the beverage field has made serious inroads in the market previously preempted by tin-coated sheet steel (tinplate).

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[14] Up to the late 1950's, the United States maintained a high tariff on aluminum ingot, alumina, and aluminum fabricated products. This tended to keep foreign imports out except at those times when the domestic price of aluminum rose high enough to permit imports to sell at prices competitive with domestic ingot, in spite of the tariff. In 1958 the tariff on alumina and aluminum ingot was reduced but maintained on fabricated aluminum. The duty on ingot imports in 1965 was 5% of the listed price. New York Times, Nov. 14, 1965, p. F-1.

Aluminum's cyclical tendency was not evident during the 1950's and the early 1960's because the industry was able to ship substantial amounts of unsalable metal to the government stockpile whenever demand declined.[15] If stockpile shipments are subtracted out from total aluminum sales during this period, however, the cyclical tendency of aluminum becomes clearly evident. Now that the government has ceased buying aluminum for stockpile purposes, this cushion against recession is no longer available.

VI. DEMAND ELASTICITY

The elasticity of demand for aluminum is influenced by (1) its degree of substitutability for various uses and (2) its price structure relative to competing metals. Where there is no substitute for aluminum's unique physical characteristics, such as in aircraft construction or sprinkler irrigation systems, demand is inelastic. On the other hand, where substitute metals such as copper and steel might be used equally well, demand is elastic. Should the price of aluminum increase relative to the prices of competing metals, aluminum is likely to lose ground to these metals.

Demand for aluminum is more elastic in the long-run than in the short-run. This is related to the time factor involved in substituting aluminum for other metals. A manufacturer's decision to switch to aluminum usually involves a capital expenditure since it is necessary either to modify the product or the production process. The manufacturer will not be greatly influenced by short-run variations in the relative prices of competing metals. Rather, he will base his decision to switch metals on the long-run technical and economic feasibility of aluminum as a substitute input. This will depend on a number of factors: (1) the long-run price of aluminum relative to other metals, (2) the long-run price stability of aluminum relative to existing metal inputs, and (3) the willingness of primary producers to offer price discounts to overcome consumer resistance to new applications of aluminum.

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[15] The stockpile took more than 20 percent of primary production in 1957 and 1958. During the entire period 1951-1963, the aluminum industry sold to the government stockpile a grand total of nearly two million tons of primary aluminum worth about $926 million. See "Aluminum: A study in Rollback Economics," Fortune, Feb. 1966, p. 108.

In short, the substitutability of aluminum for other metals has the following bearing on the elasticity of the short and long-run demand curves of aluminum: (1) the short-run demand for aluminum is fairly price inelastic; (2) the long-run demand for aluminum is relatively price elastic; (3) a lower price is required to encourage new applications of aluminum than to retain buyers already familiar with aluminum and (4) long-run price stability is an important factor in increasing alumi-

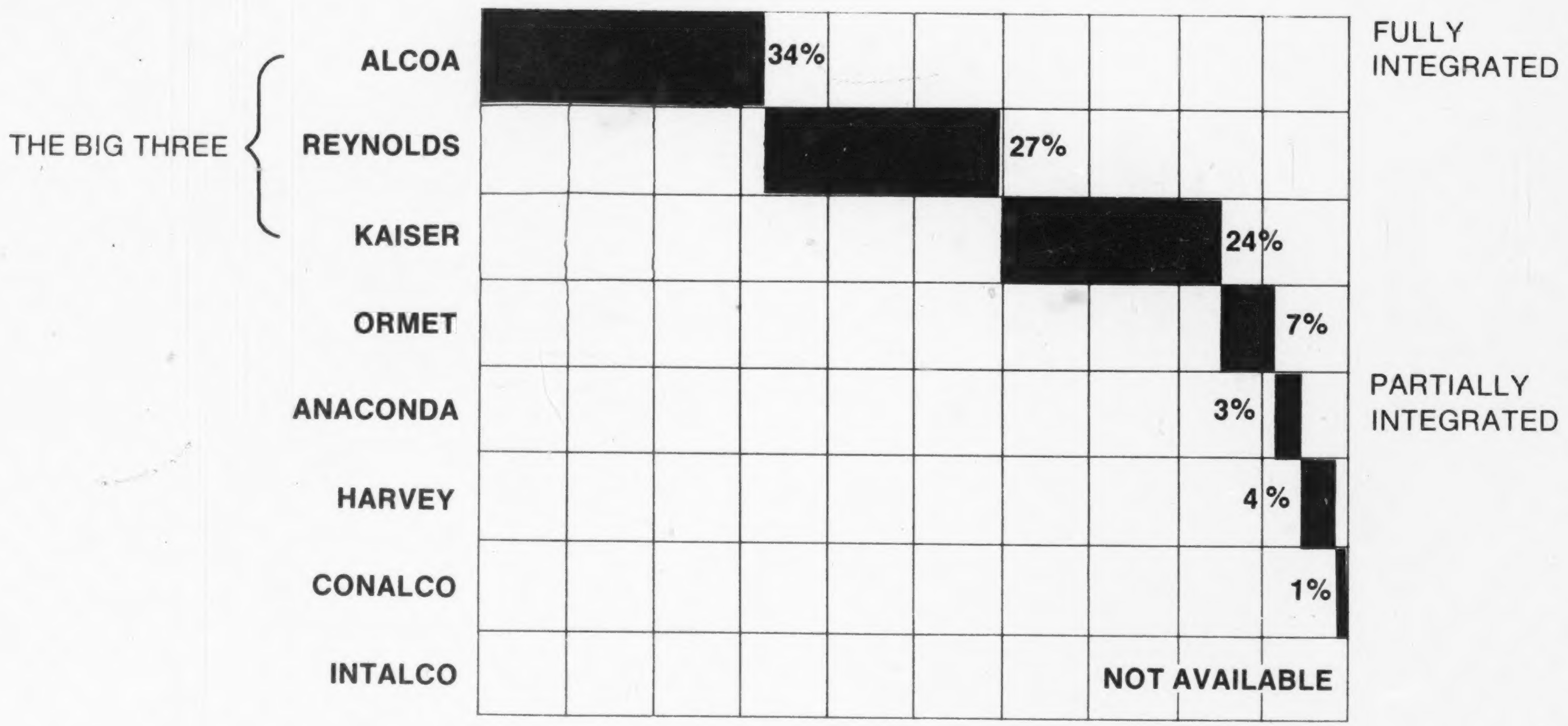
APPENDIX

FIGURES RELATING TO
ESSAY ON THE
MARKET STRUCTURE OF THE ALUMINUM INDUSTRY

(Figure 1 is incorporated in Text)

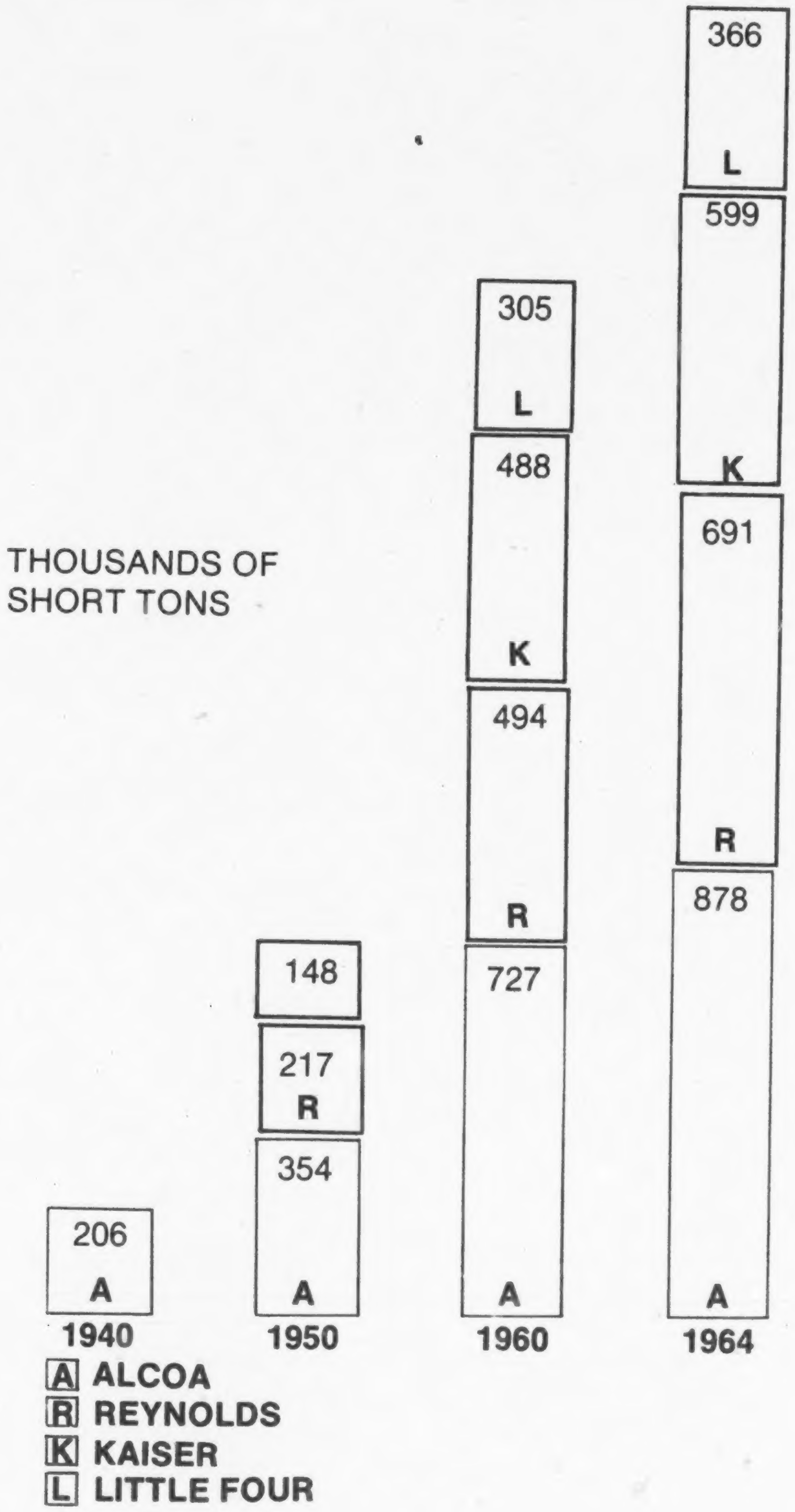
2 Aluminum Industry Market Concentration

INGOT PRODUCTION (1964 in %)
PRIMARY



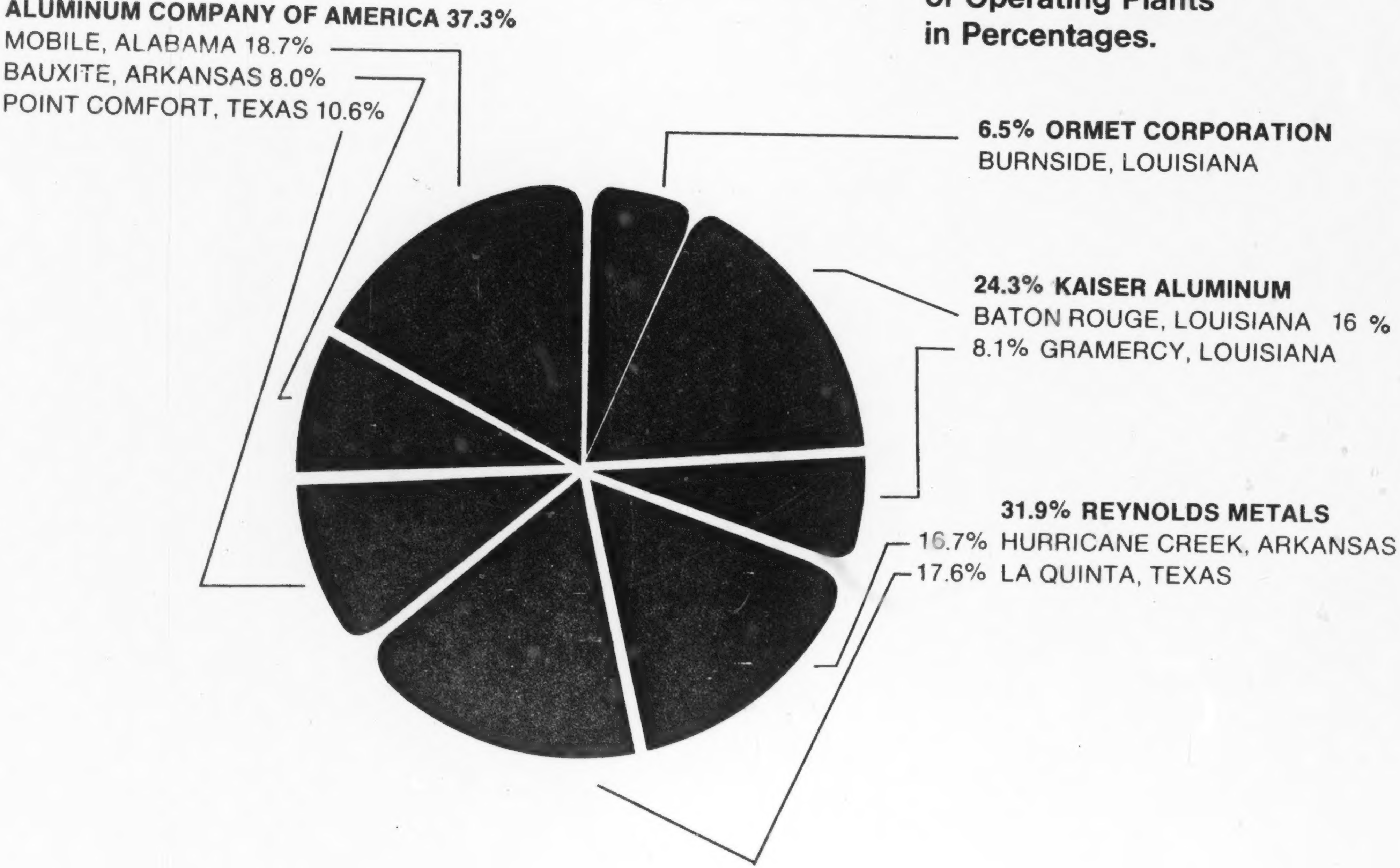
FABRICATED
17,000 FIRMS PLUS THE EIGHT ABOVE

3 Market Concentration, Aluminum Ingot Producers.

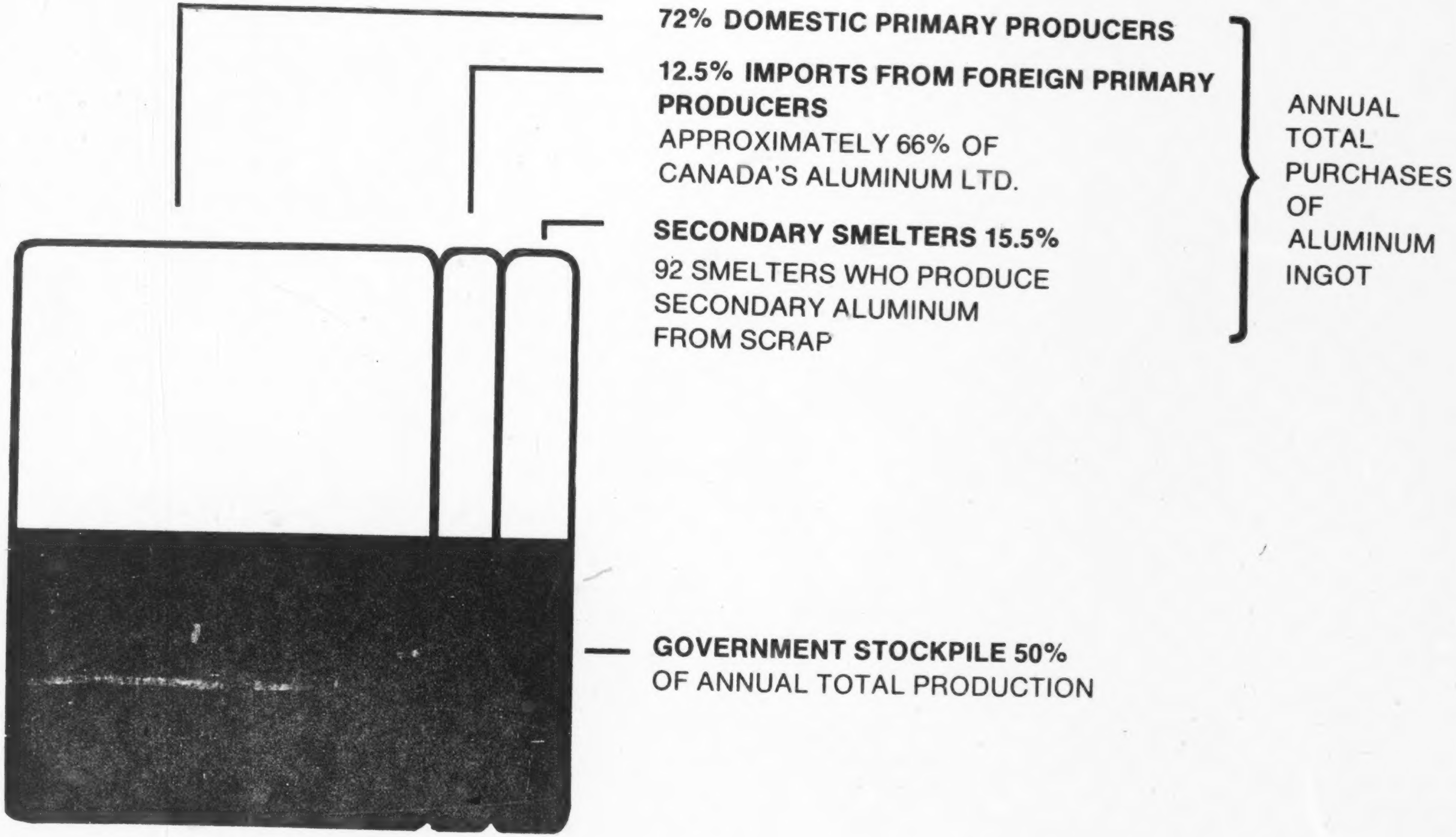


4

Market Concentration, Aluminum Industry for Stage 2, 1963. Capacity of Operating Plants in Percentages.

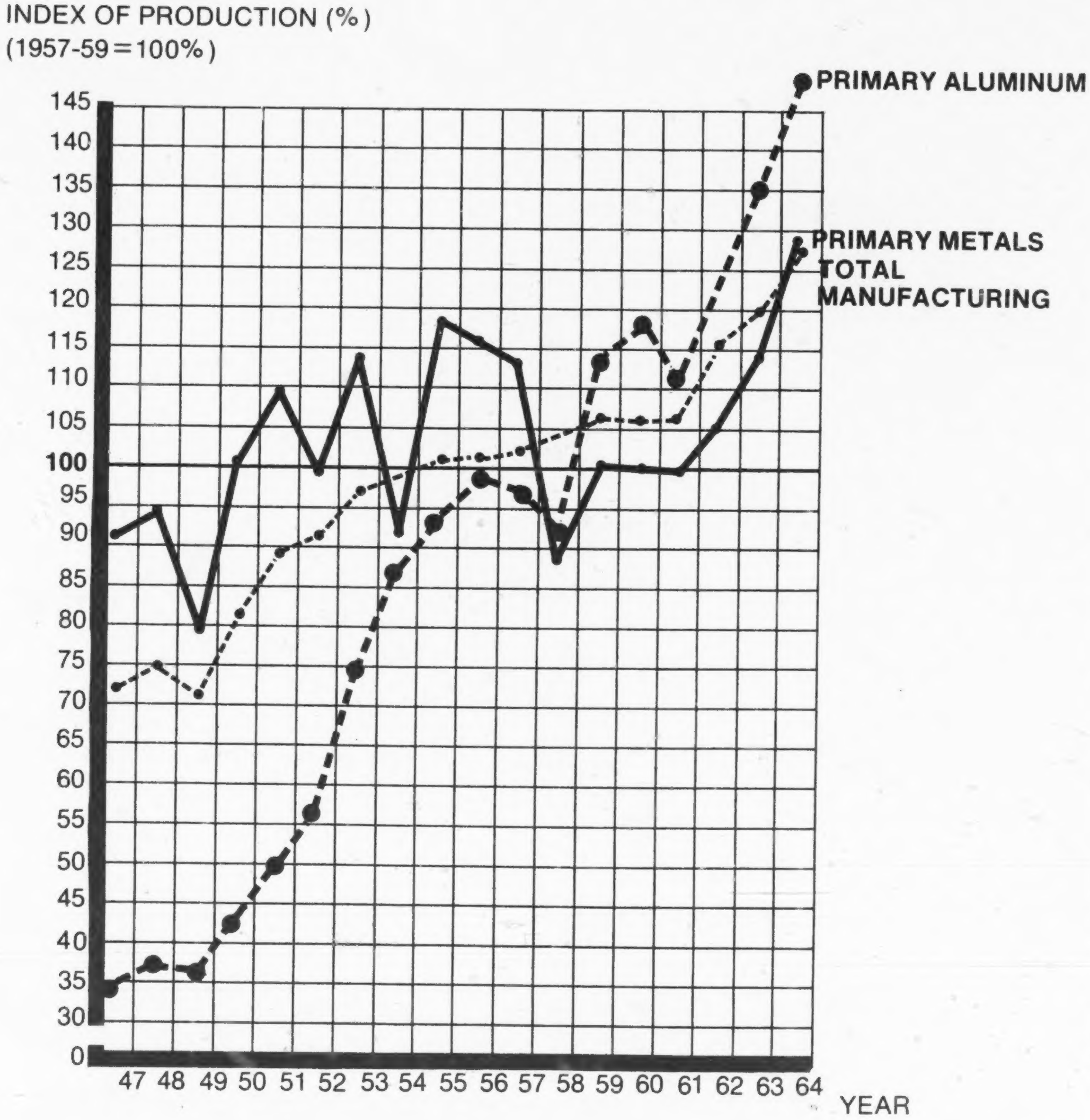


5 Competing Sources of Aluminum Ingot. Summary of Sellers of Ingot by Major Sources of Supply, 1964.



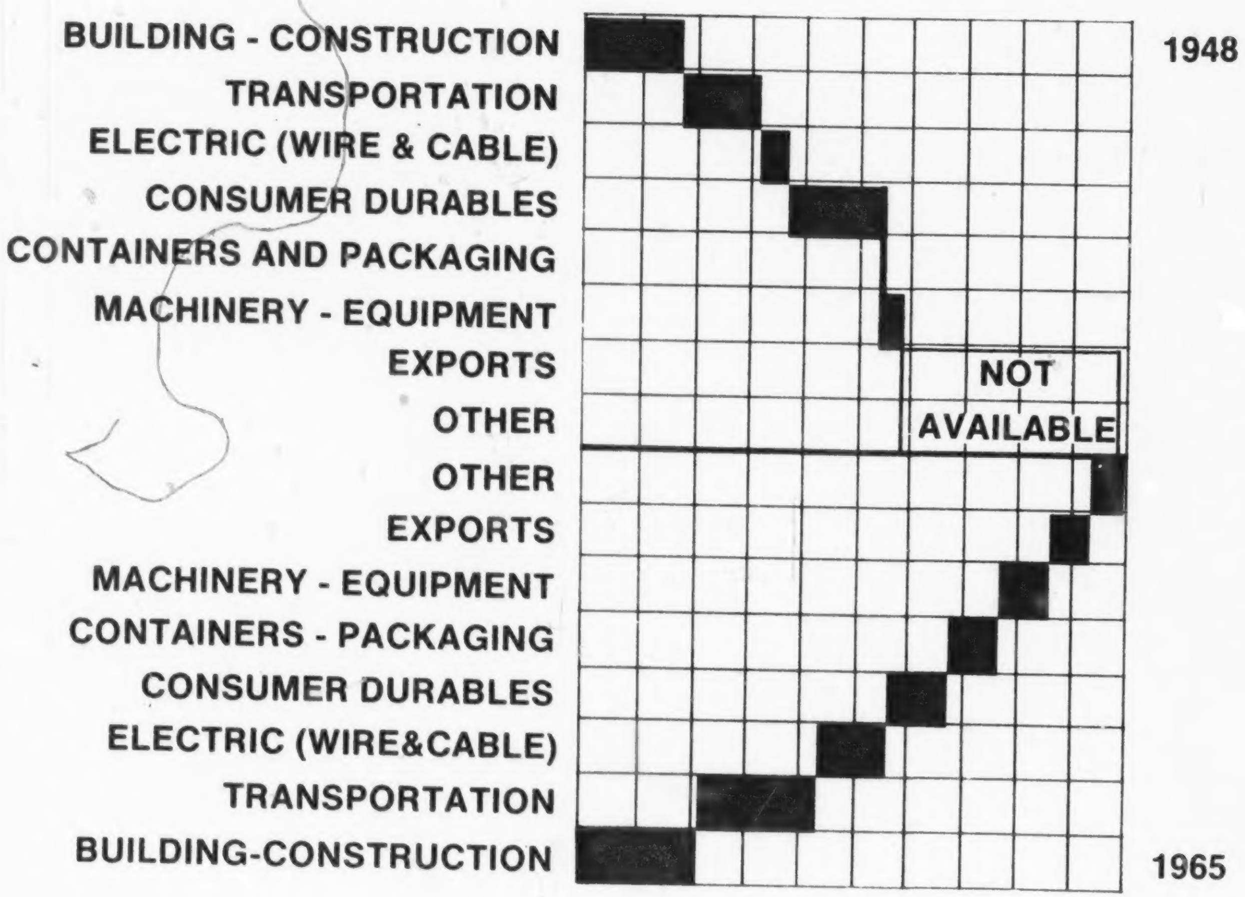
6

Growth in Commercial Consumption of Aluminum, Manufacturing, and Primary Metals in The U.S., 1947-1964.

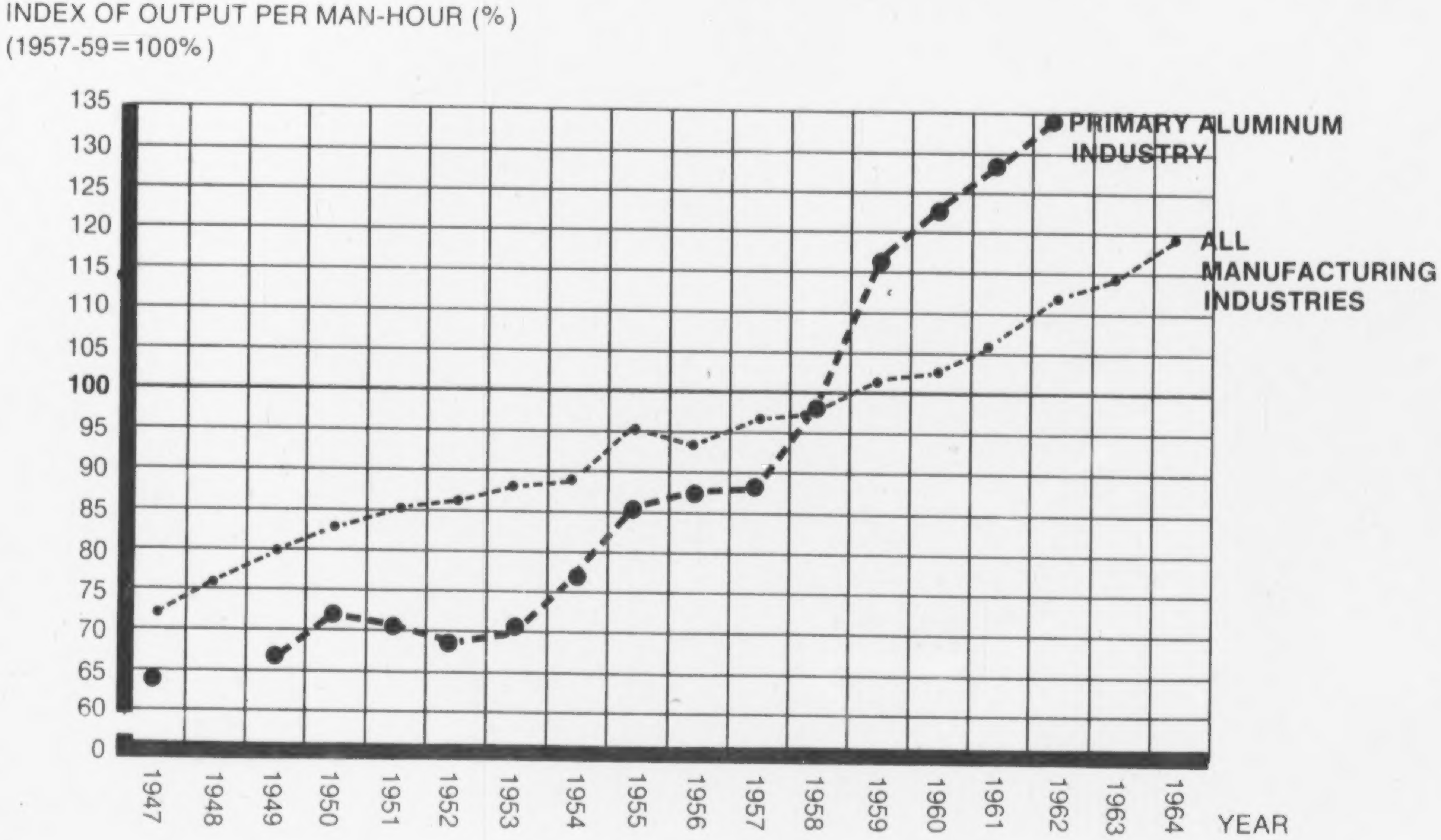


7

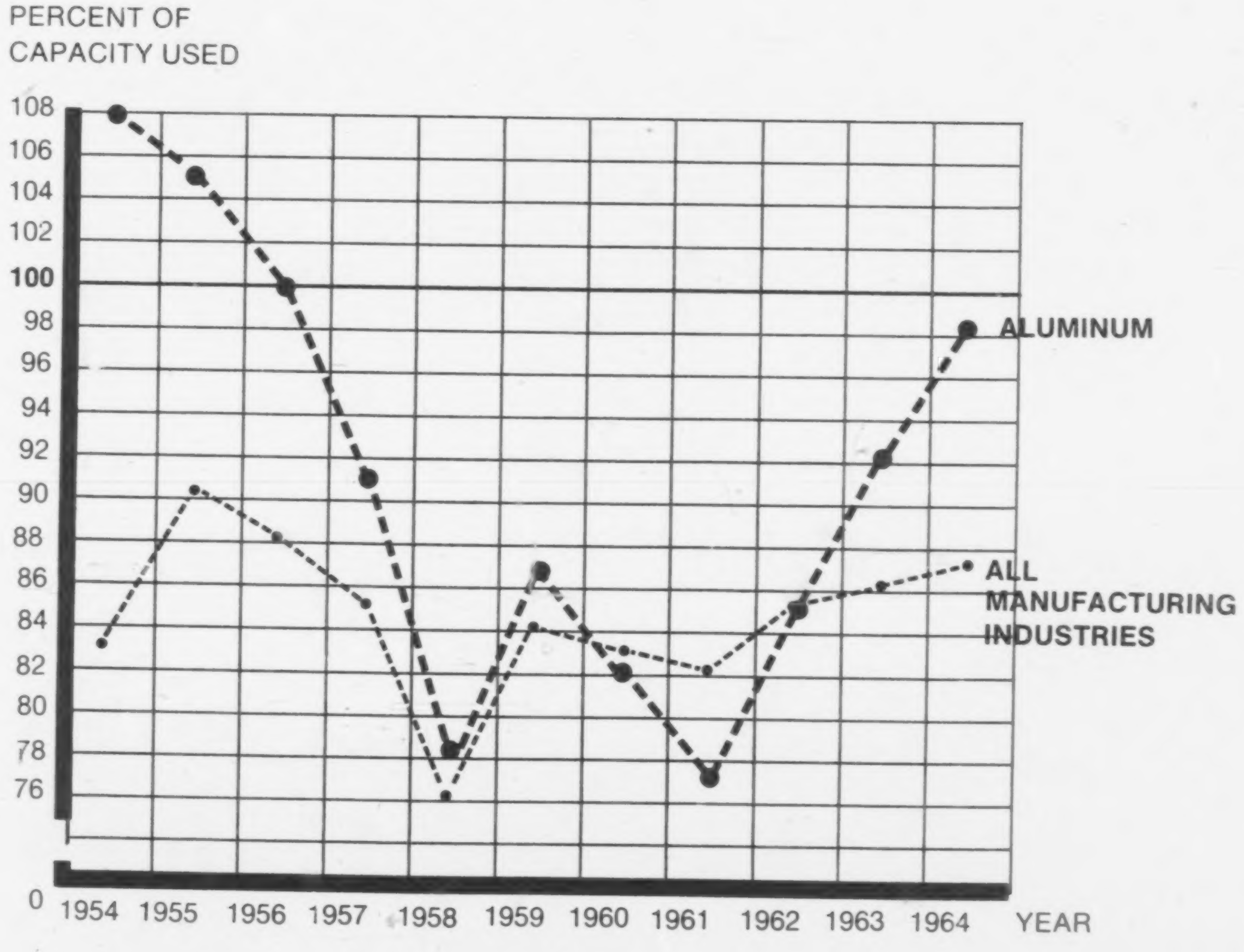
The Changing Pattern of Aluminum Consumption by Market 1948 and 1965; Percent of Total Consumption by Various Uses.



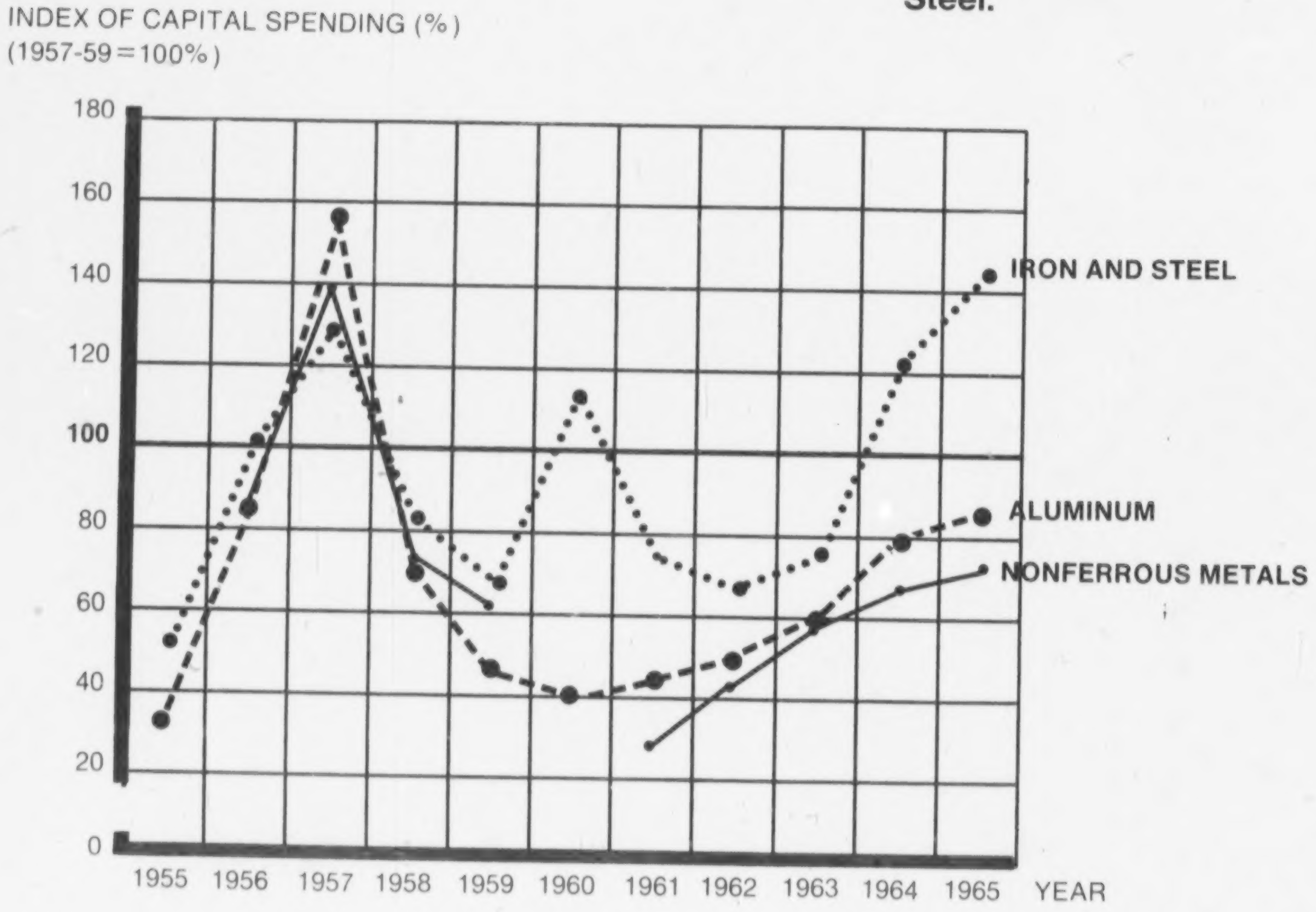
8 Output per man hour for Primary Aluminum and all Manufacturing 1947-1964.



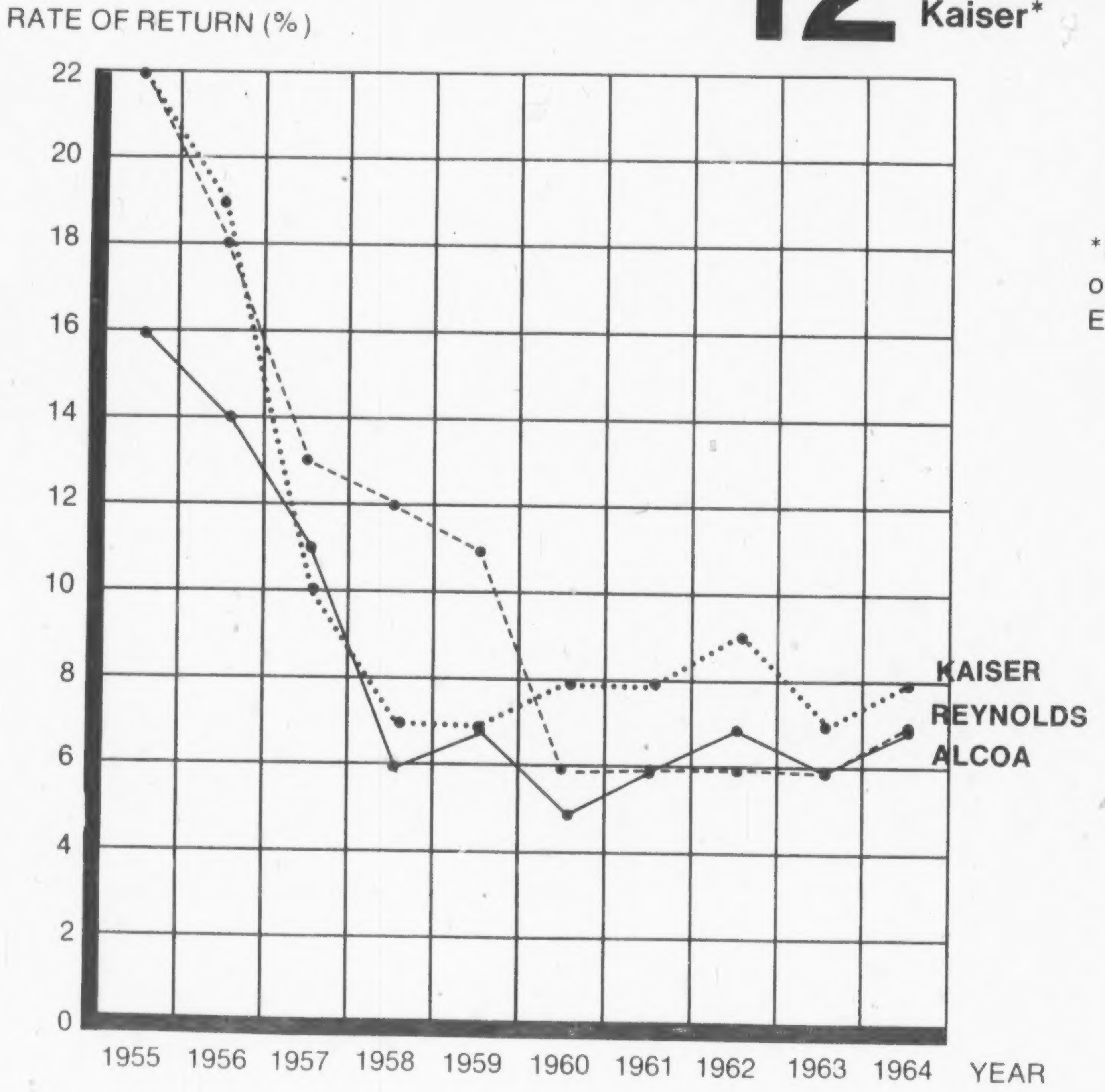
9 Percent of Industry Capacity used. Aluminum Industry Compared with Total Manufacturing.



11 Indexes of Capital Spending, Primary Aluminum, Nonferrous Metals, Iron And Steel.

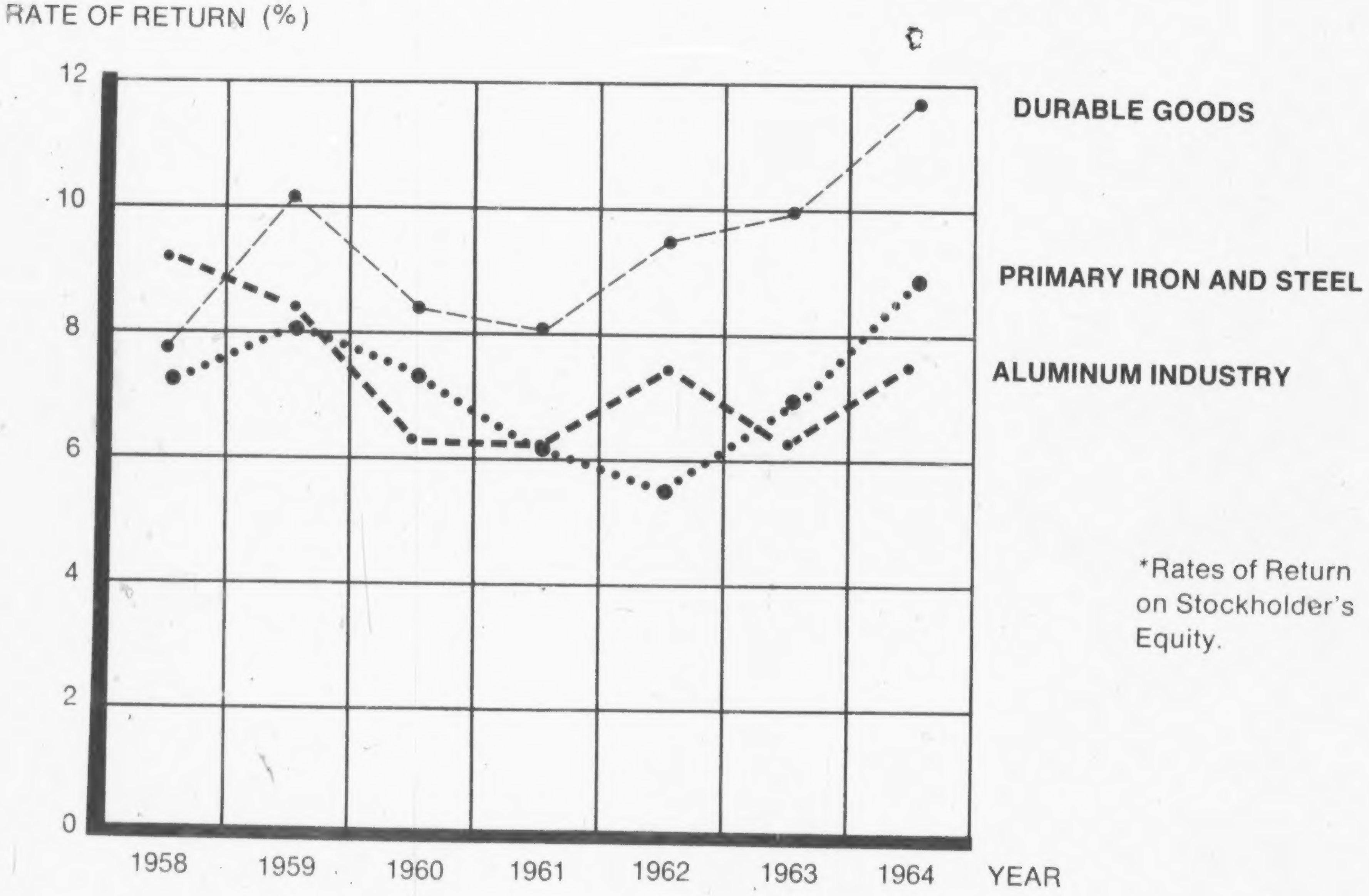


12 Profits, after Taxes, Alcoa, Reynolds, Kaiser*



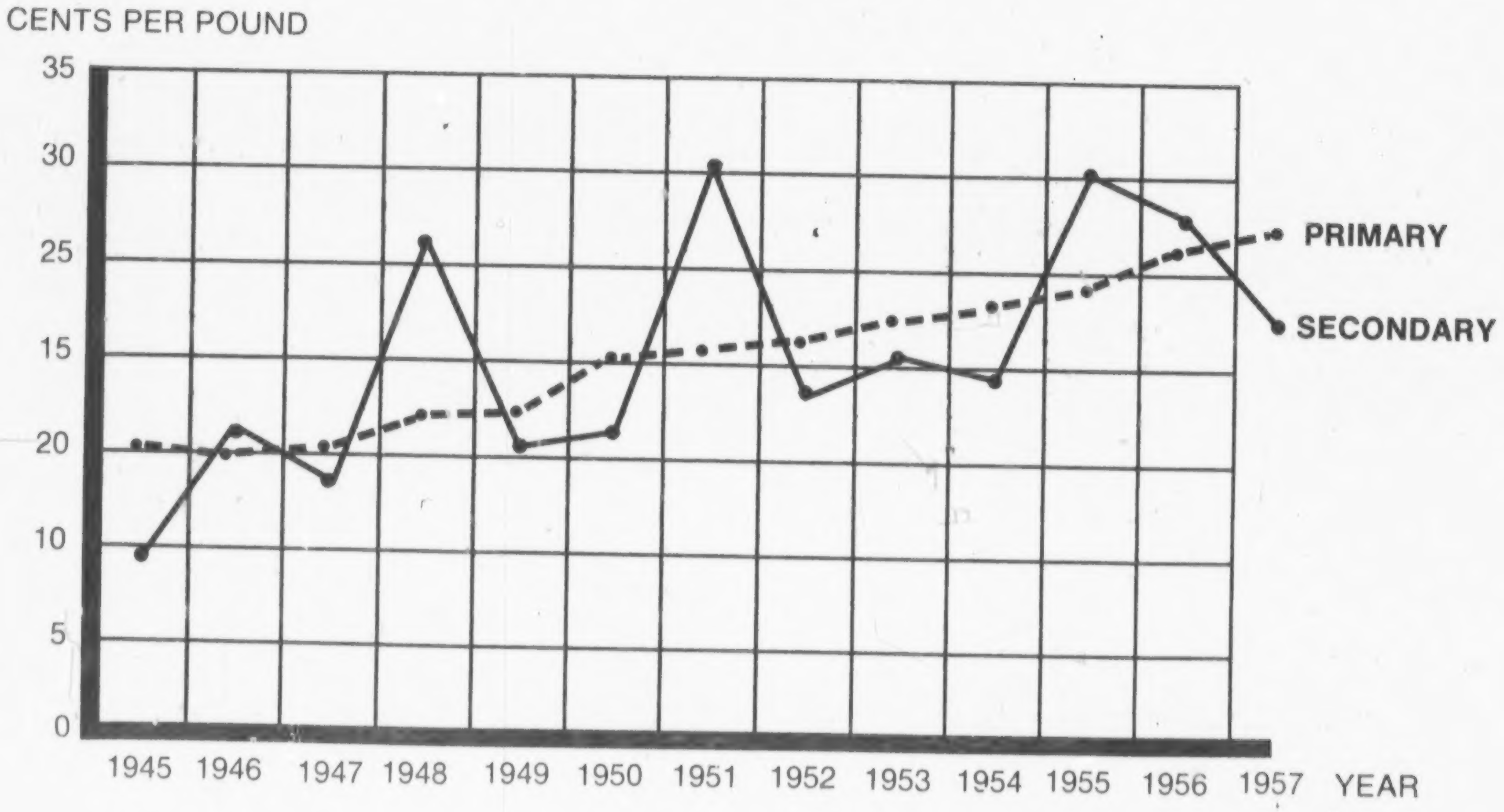
*Rates of Return on Stockholder's Equity.

13 Profits, after Taxes, in Aluminum Durable Manufacturing and Primary Iron and Steel Industries.*



*Rates of Return on Stockholder's Equity.

14 Primary and Secondary Aluminum Ingot Prices, 1945-1957.



Unit II
Lesson 8

Reading No. 2

THE HISTORY AND MARKET STRUCTURE OF THE AUTOMOBILE INDUSTRY

I. TECHNOLOGY

The automobile industry is a classic example of the workings of mass production. More than fifty years ago, Henry Ford conceived the idea of moving a car chassis through the plant and adding parts, instead of building up one car at a time in a stationary location. The production of 10,000 units of the Model T in 1909 marked the real beginning of quantity production of low-priced cars.

Stages of Production

There are three major stages of production in the manufacture of motor vehicles: design, machinery, and assembly. In addition, all of these stages are assisted by research and engineering staffs engaged in finding ways to improve the car and methods of production.[1]

Design. Designing is begun about two years before the model appears on the market. Experimental models are built and subjected to laboratory and road tests. Corrections are made before the designs are released to the production departments. The patterns, dyes, machine tools, and necessary fixtures are then made.

Machining. Machining of the automotive parts requires extensive foundry equipment as well as special-purpose machine tools. The basic processes are metal cutting, casting, forging, stamping, welding, and heat treating. Castings are used to make a number of intricately shaped parts, from the cylinder block to the radiator ornament. Crankshafts, camshafts, gear blanks, connecting rods, valves, and steering-gear parts are usually forged from steel. Hundreds of the parts of a vehicle are formed by stamping in presses; these include body parts, fenders, frames, gasoline tanks, fans, wheels, crank cases, rear axle hosings, lamp parts, and dust shields. Many stampings are welded for form the body and its parts. By heat treating, the crystalline structure of steel is changed to obtain the desired properties of hardness, toughness, and high strength. All of these form-making operations are physically segregated from the assembly lines.

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[1] General Motors alone has about 19,000 engineers and scientists engaged in research and engineering. Approximately 17,000 are in the divisions and 2,000 in the general technical staff. See Alfred P. Sloan, Jr., My Years with General Motors (New York: Doubleday and Co., 1964), p. 249.

Assembly. Assembling the more than 15,000 parts that go into a modern automobile is like putting together a giant mechanical jigsaw puzzle. A central scheduling unit programs each car through the four main assembly areas--body, paint, trim, and chassis. Through precisely coordinated organization and split-second timing, parts and sub-assemblies meet on the final line at just the right moment to make each car exactly as ordered. The flow of materials, the gradual build-up of body and chassis, and the final dressing and adjustments are depicted in Figure I.

The guiding principle is to save time by bringing material to the worker instead of having the worker go to the material. Each worker has the small bit of work to do which he is able to perform while the car portion he is working on is being conveyed in front of him. Thus, wasted energy and motion are eliminated and every worker becomes a specialist in doing a small part of the labor. Adam Smith in his Wealth of Nations was the first to demonstrate the benefits of specialization in the mass production of the common pin.[2] His classic description of the efficiency of specialization in pinmaking could equally apply to the modern conveyer system of the automobile industry.

Vertical Integration

The auto industry began essentially as an assembly plant operation. Independent supplier firms for the most part manufactured the engine and body parts. As producers began to accumulate capital, the auto industry integrated backwards into the manufacture of its own parts. However, the auto industry is not integrated in the sense that they manufacture all the parts themselves. Rather, automobile companies prefer to maintain "two sources of supply" in order to provide some immunity from total interruption in the supply of any one component part. Automobile manufacturers practice "tapered integration," which means they keep their parts factories operating at predetermined output rates, filling additional supplies through "contract suppliers."

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[2] Adam Smith, The Wealth of Nations, (New York: The Modern Library, 1937), pp. 4-5.

The auto industry has also integrated forward in providing dealer outlets to distribute its product in local communities. Most automobile dealerships are independent businesses operating under sales agreements with auto companies. Under such agreements, the manufacturer agrees to sell almost entirely through the dealer in the specified area. In return for this franchise privilege, automobile producers specify the showroom and repair facilities that their dealer must maintain, as well as set sales quotas. In some instances, they also assist with the capital funds for necessary improvements in the dealer's franchise.

II. SELLER CONCENTRATION

Of the country's major industries, automobile manufacture represents the apex in economic concentration. Since the early 1960's, four companies have accounted for almost 100 percent of the output of passenger cars. Even this figure does not reveal the full extent of the concentration that exists. In 1965, General Motors produced over half of the cars manufactured in the U.S.; its share in 1965 was 53 percent, as contrasted with 27.5 percent for Ford, 15.7 percent for Chrysler, and 3.7 percent for American Motors (see Figure 2 in appendix). Also noteworthy is the tremendous gap in the size of the market share between each of the "Big Three," particularly General Motors, and the smallest firm, American Motors.

In terms of new car registrations, this general relationship is only slightly different when imports are considered. In 1964, General Motors had about 49.1 percent of U.S. sales, Ford 26 percent, Chrysler 13.8 percent, and American Motors about 4.7 percent. The remaining 6.4 percent was divided between Checker Motors, a manufacturer of taxicabs (0.4 percent) and foreign imports (6.0 percent).

General Motors is not only the largest auto producer, it is also the largest concern in the United States and the world. Regularly, in the Fortune listing of the 500 largest industrial corporations, this company has ranked first (Table I in appendix). In 1965, its total annual sales were in excess of 20.7 billion dollars, an amount larger than the gross national product of all but a dozen countries in the whole world. Or to look at it another way, the combined output of the 54 smallest members of the United Nations--almost half the total membership--barely equaled the output of this one American corporation.

Just a half century ago, many hundreds of firms were engaged at one time or another in the commercial production of passenger cars. Even as late as 1921, there were 88 firms turning out cars on a commercial basis. Since that time, there has not been a successful new entry into the industry except for the formation of the Chrysler Corporation in 1925. At the same time, the independents' share of the market has steadily declined from approximately thirty-three percent in 1929 to ten percent of the market prior to world War II. Although the independents' share of the market rose for a short time to 19.1 percent in the immediate post World War II period because of the temporary shortage of new and used cars, the 1950's and 1960's saw the independents dwindle in number one by one, so that today only two firms, American Motors and Checker Motors, remain (Figures 2 and 3 in appendix).

How can we explain the virtual disappearance of the independents in the industry, the rise of the "Big Three," and in particular, the spectacular rise in the position of General Motors? The answer is directly related to changes in conditions for entry and survival in the industry between the early and later periods of the industry's growth. These changes will be discussed in the following section under barriers to entry.

III. BARRIERS TO ENTRY

The history of automobile manufacture describes three distinct periods, and the ability of new firms to enter the industry differed in each period: (1) the era of phenomenal growth ending in the middle 1920's; (2) the period of maturity with its terminal point the beginning of World War II in 1941; and (3) the post-World War II period from 1941 to the present.

Entry Prior to Middle 1920's -- Era of Rapid Growth

Prior to the early 1920's, entry into automobile production was relatively easy. In the fifteen years between 1906 and 1920, a total of 126 firms entered the industry. New entry in this period was facilitated by two major factors: (1) the rapid and substantial growth in the total market demand for automobile, and (2) the low capital requirement to enter into auto production.

In the early period, demand persistently exceeded the capacity of the industry to produce. New firms could grow without diverting sales from other producers, without disrupting the given pattern of total demand, without fear that established makers would make deliberate efforts to keep them out, and without need to create demand for particular makes through costly expenditures on product differentiation.

Most of the early producers initially made automobiles as an offshoot of an existing enterprise, usually either the manufacture of machinery of some kind, or of vehicles, such as bicycles or carriages. Consequently, there was ordinarily a parent organization that could provide the initial capital and managerial and labor skill. To a very considerable extent, these early automobile factories were predominantly assembly operations. Independent supplier firms made the components, such as radiators, engines, etc. It became possible, therefore, to go into automobile manufacturing with a minimum investment, since the "factory" was merely an *assembly* plant. Moreover, the financing of production could be handled by buying parts on credit and selling finished cars to dealers for cash, so that very little working capital was required. The new firm, once it had succeeded in putting cars on the market on a commercial basis, stood a good chance of making substantial returns which would provide internal funds for expansion. Returns in the first decade of the century were in many cases little short of fabulous. High profitability, therefore, acted as a stimulus both to entry of new firms and to rapid self-expansion for the newcomers.

The Rise of Ford. Although other manufacturing concerns experimented with the production of low-priced automobiles on a mass production basis, the techniques developed by Henry Ford proved the most successful. The secret of Ford's success was his realization that the first problem was to design a car that was low priced and at the same time suitable for mass consumption. He met these specifications with the Model T of 1908 -- a car which was durable, capable of being used in city or country, easy to operate, and simple and inexpensive to maintain. He and his assistants then went to work on the problem of manufacturing the car cheaply, and in four years of experimentation evolved the moving assembly line. The tremendous economies of scale associated with this method of production permitted Ford to drop the price of the Model T from $950 to 1909 to $290 in 1920. Ford's success was spectacular. By 1920 he was making half the motor vehicles in the world.

The Rise of General Motors. Ford would have continued to dominate the auto market, but for the appearance in the mid-1920's of a plateau in the long-run growth of total demand for new cars. New car demand became mainly a function of (1) replacement demand for existing car users and (2) population growth. From about 1923 on, most new car sales had to be made to old car owners.

As a result of the "saturation" of automobile demand, a market in used cars developed which handicapped the sale of new vehicles. Price cuts were no longer effective as a means of increasing sales, since new cars were now competing with a large stock of old cars. This opened the door to demand based on factors other than the need for dependable transportation at low cost. Ford's policy was to keep the Model T virtually unchanged year after year to avoid retooling costs and thereby keep prices low. In contrast, General Motors originated the idea of model changes to make older cars seem obsolete, and thus stimulate a demand for new cars.

In 1923 a Chevrolet was introduced which sold for about $100 more than the Model T, but which offered new styling, greater speed, better transmission, and so forth. Given the choice between an economic and dependable but rather "old-fashioned" Ford and a more "modern" Chevrolet at a hundred dollars more in price, the public chose the Chevrolet. With the success of the new Chevrolet, Ford's market share fell drastically from over 55 percent in 1921 to slightly more than one-third in 1926. But in 1930, Ford's share rose to 40 percent after the introduction of the Model A. 1930 was Ford's last year as the country's top producer. In 1931 General Motors took the lead with 43 percent of the domestic production of autos and has kept the leading position ever since.

General Motor's spectacular growth can be attributed to several factors. First, through its partnership with DuPont Company, it had ready access to capital and credit. Second, DuPont's financial backing enabled G.M. to spend larger sums on advertising and sales efforts to build up strong consumer loyalty to its products, and to make possible more frequent model and design changes. Third, a strong dealer organization, embracing the largest number of dealerships of any automobile company in the world was established. Fourth, the prices of General Motors used cars were consistently higher than comparable models of its competitors, a factor which greatly aided dealers in swelling the sales of new General Motors cars. Finally, by organizing the General Motors Acceptance Corporation, it assisted dealers in financing the purchase of new cars.

The Rise of Chrysler. The second firm to cut into Ford's low-priced car market was Chrysler Corporation. Chrysler purchased the Dodge Brothers Manufacturing Company in 1928. The acquisition of so powerful a dealer organization and large-scale manufacturing facilities enabled Chrysler to introduce the low-priced Plymouth in 1928 as a competitor of both Ford and Chevrolet. Chrysler inaugurated an all-out campaign to promote its low-priced Plymouth. Its advertising budget far exceeded everyone else's, except General Motors'. From 1928 through 1931, its share of the market stayed at about eight percent, but by 1933, it was selling one-fourth of the new cars in the country, taking second place in the industry from Ford. The failure of any of the other independents to duplicate Chrysler's achievement was due to their lack of the resources to put on an advertising campaign, and to wait several years for acceptance.

The Era of Maturity (late 1920's-1941)

The rise of the "Big Three," raised the barriers to entry in a number of important ways. The financial requirements for entering into automobile production were now formidable because of the burdens of restyling and advertising. Although automobile production remained substantially an assembly operation during this period, the great growth in both plant and firm size of Ford, General Motors and Chrysler made the cost of fixed investment alone enormous.

Total demand for new cars was growing at roughly the same rate as the total population. Assuming a potential firm could meet initial financial requirements, it had also to calculate its chances for staying in business. That meant that the newcomer, to succeed, would have to capture and hold a sizeable market in order to reduce the market shares held by established firms. It was highly unlikely that a newcomer could break the wall of consumer loyalty to the well established "Big Three;" their extensive advertising and their networks of franchised dealers throughout the country (to promote sales and reinforce loyalty) gave them a tremendous competitive advantage over any newcomer.

Another important competitive disadvantage of a small newcomer was the economies-of-scale enjoyed by the "Big Three". Even if the new entrant eventually achieved sufficient sales volume, he faced the possible hazard that the established sellers would resort to sharp price reductions aimed directly at the newcomer. The larger the plant and firm, the lower the cost per car.

The depression years of the 1930's saw production drop from the peak of more than five million vehicles in 1929 to a low of just over one million in 1932. Output climbed fairly steadily thereafter, but the figure for 1929 was not surpassed in peacetime for more than twenty years. The industry's response to the depression was to cut costs and to intensify sales efforts. Although the Big Three rode out the storm with considerable difficulty, they suffered far less loss than their smaller competitors, who by and large went under. Between 1929 to 1939, the independents' share of the market dropped from 25 percent to 10 percent, and many famous names, like Pierce Arrow, Stutz, and Franklin disappeared altogether.

Post World War II Era

Entry of Kaiser-Frazer Corporation, 1946. The return of peace following World War II brough a tremendous growth in demand for automobiles, and several newcomers were attracted into the industry. The most promising of these efforts was made by Kaiser-Frazer Corporation in 1946. The latter entered the industry under four unusually favorable circumstances: (1) a great shortage in the supply of new cars because of the suspension of car production during World War II; (2) the opportunity of purchase from the Federal Government war plants usable for car production at a relatively low cost; (3) experinced executives with exceptional entrepreneurial skill; and (4) automobile industry connections through the Graham-Paige organization that it inherited. The Kaiser Corporation performed a remarkable feat of engineering and enterprise to exploit the favorable short-run factors. However, the Kaiser venture prospered only until the automobile market was back on a regular peacetime basis. By 1954, the Kaiser automobile industry was absorbed by Willys Motors, Inc., and was forced to withdraw from the production and sales of autos.

Several factors were responsible for the Kaiser Corporation's decline: (1) the difficulty of raising private capital to finance plant improvement;[3] (2) the inability to compete in annual model changes; (3) the low trade-in value of the Kaiser car; and (4) the difficulty of attracting dealers to retail its cars because of the unprofitable dealerships. Thus, although the Kaiser Corporation entered the automobile industry under the most favorable conditions of entry, the barriers to remaining in business were too great when demand conditions returned to normal.

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[3] In 1949, for example, Kaiser was forced to borrow $44 million from the Federal Government's Reconstruction Finance Corporation, when the private capital market declined to finance its capital needs.

Barriers to Entry Since The 1950's

Tables 2, 3, and 4 in the appendix summarize present-day barriers to entry into the automobile industry under three types of categories: (1) economies of scale, (2) product differentiation, and (3) capital requirements. The tables demonstrate that today the barriers to entry are even higher than the pre-World War II period because of three new factors: (1) economies of scale associated with the trend toward complex manufacturing facilities, which integrate production of "component parts," such as engines and bodies with "assembly plant" production; (2) higher financial costs resulting from investment in larger integrated plant complexes; (3) increased emphasis on annual model changes and large-scale advertising campaigns; and (4) the branching out into a well-diversified product line embracing four rather than one price class. In view of these additional barriers, the likelihood of further entry into the industry today seems well-nigh impossible.

Efficiency of Plant Size. The question arises, how large must an automobile plant be in order to realize optimum efficiency? According to a study be Professor Joe Bain, the minimum sized integrated plant complex necessary to realize lowest per unit costs, would be 300,000 passenger cars per year, with some probable additional increase in efficiency up to 600,000 units.[4] A plant complex of this size represents from 3 percent to 6 percent of national output, assuming an industry total of 9,335,000 in 1965. The economies of scale arise principally from greater efficiency in the production of major components, especially engines and bodies. Scale economies are relatively unimportant in assembly operations: 60,000 to 180,000 units per year are considered to be an optimal size for assembly alone.

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[4] Joe S. Bain, Barriers to New Competition (Cambridge: Harvard University Press, 1956), pp. 244-6.

A similar estimate of optimum size was given by Mr. George Romney, former president of American Motors, at the Senate Hearings on Administered Prices in 1958. According to his testimony, a company can build between 180,000 and 220,000 cars a year on a one-shift basis and 360,000 to 440,000 cars on a two-shift basis and make a good profit and "not take a back seat to anyone in the industry in production efficiency."[5]

On the basis of these estimates, General Motors, with an annual production in 1965 of around 4,949,000, is eight to sixteen times the size needed for optimum production efficiency; Ford, with an annual production of around 2,566,000 in 1965, is four to eight times the minimum; and Chrysler, with a production of approximately 1,468,000 in 1965, two and half to five times the optimum-sized plant. This does not mean, of course, that General Motors, Ford and Chrysler have passed the point of optimum plant efficiency. For all three companies, production is carried on by a number of separate divisions and plants. What these figures suggest, however, is that a comparable degree of efficiency in production can be attained by an enterprise well below the size of any of the Big Three.

Costs and Supply. The most significant feature of manufacturing costs in the automobile industry is the magnitude of overhead costs in relation to total production costs. Since the total amount of overhead costs is relatively constant whether the volume be 500,000 of 1,000,000 units, overhead costs vary inversely with volume. The volume of automobile output, therefore, is vitally important in the determination of unit costs, amount of profits, and the pricing decisions of the industry.

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[5] United States Senate, Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, 86th Congress, 1st Session, Hearings on Administered Prices, Part 14, p. 2851.

Overhead costs fall under five major contegories in the automobile industry: (1) maintenance and repair expense; (2) depreciation and obsolescence; (3) tooling, styling and engineering costs, including amortization of special tools; (4) selling, general and administrative expense; and (5) insurance, local taxes, and miscellaneous. Overhead costs roughly account for one-third of aggregate costs, with the most important being tooling, styling, and selling costs. With the exception of tooling costs, the automobile industry does not break down overhead costs into the specific categories we are interested in for analysis purposes. Consequently, our discussions will be limited to tooling costs, although the same general conclusions apply to styling costs and advertising costs.

Tooling Costs. Tooling costs are a major expense item in the automobile industry because of the necessity for frequent model changes. Combined outlays for these purposes have always been large, and in years of major changes are tremendous. In 1964, the Big Three spent $1,237 million for special tools, dies, jigs and fixtures. These special tools are amortized (written off) over relatively short periods of time because of rapid changes in automobile styling and design, and investment is really for only a short time. Amortization changes for special tools parallel changes in tooling expenditures fairly closely with roughly a one-year time lag. Table 7, below, summarizes the amount spent by each of the Big Three for special tools and for amortization of special tools in 1964.

Table 7

TOOLING COSTS OF "BIG THREE", 1964

(in millions of dollars)

Company	Expenditures in Special Tools	Amortization of Special Tools, 1964
General Motors	751.9	591.3
Ford	324.7	234.6
Chrysler	160.0	95.0
Total Big Three	1,236.6	920.9

Source: Annual Reports, 1964 of General Motors, Ford, and Chrysler in the automobile industry.

Since World War II, tooling costs have increased considerably in the automobile industry. For example, Chrysler's expenditures for special tools were $66 million in 1955 as compared with $160 million in 1964. Correspondingly, special tool amortization changes jumped from $51 million in 1956 to $171.6 million in 1965.

Since tooling and styling costs do not vary with volume, the amount of profits on any model depends on the volume of production over which the costs of tools and dies can be spread. Thus, only the large companies, by achieving sufficient volume to keep the unit costs of tools and dies low, are likely to make profit.

IV. PRODUCT DIFFERENTIATION

Few industries have as high a degree of product differentiation as the automobile. For automobile manufacturers, there are two advantages to policies aimed at increasing product differentiation: (1) advertising and model changes can enlarge the total market for new cars by encouraging consumers through psychological suggestion to buy new cars before the old ones wear out, and (2) these policies can increase an individual seller's share of the market at the expense of competitors. Both of thse objectives have aided in reducing the price elasticity of demand for autos, thereby eliminating the need to compete through price changes.

Product differentiation is the major cause of high barriers to entry in the auto industry and for the present high seller concentration of firms. As explained in section 3 above, new entry into the industry is discourages because of the great disadvantages product differentiation imposes on the newcomer in the form of (1) high financial costs for annual model changes and related advertising outlays, (2) the tendency for buyers to rely upon the established reputation of the Big Three producers, (3) the need for a widespread dealer organization, and (4) the low resale and trade-in value of the new firm's model compared with the established members of the industry. A summary of the bases for product differentiation in the automobile industry is provided in Table 5 of the appendix.

APPENDIX

TABLES AND FIGURES
RELATING TO ESSAY ON
MARKET STRUCTURE OF THE AUTOMOBILE INDUSTRY

(Note: Tables 7, 8, and 9 and Figure 1 are
incorporated in the text of the Essay)

TABLE 1
FORTUNE DIRECTORY'S RANKING OF "BIG FOUR" AUTOMOBILE COMPANIES, 1964.
Comparison of Sales, Assets, Net Profits, Invested Capital, and Return on Sales and Stockholder's Equity

COMPANY	Rank by SALES*	SALES (in $1000's)	ASSETS (in $1000's)	NET PROFITS (in $1000's)	INVESTED CAPITAL (in $1000's)	Profit as Per Cent of	
						Sales	Stockholder's Equity
General Motors	1	16,997,044	11,245,299	1,734,782	7,599,015	10.2	22.8
Ford Motor	3	9,670,766	6,459,295	505,642	4,011,022	5.2	12.6
Chrysler	6	4,287,348	2,420,774	213,770	1,122,149	5.0	19.1
American Motors	55	1,009,471	420,698	26,227	278,718	2.6	9.4
Industrial Median for Motor Vehicles and Parts**						4.5	12.5
All Industry Median**						5.0	10.5

* FORTUNE Directory ranks the 500 largest corporations in order of value of sales.
** Includes only companies in the 500 largest corporations.

Source: "The Fortune Directory," Fortune, July 1965, pp. 149-167.

TABLE 2

BARRIERS TO ENTRY IN AUTO MANUFACTURE: ECONOMIES OF SCALE*

PRODUCTION	ADVERTISING PROMOTION	DEALERS
A. Assembly Line Output Optimum-sized assembly plant requires a production level between 300,000 to 600,000 units per year -- approximately 3.2 - 6.4 per cent of 1965 output. Large volume production, however, permits distribution of assembly plants around the country and savings in costs of transporting finished cars. B. Manufacture of Bodies and Engines. Frequent model changes require large annual tool and die costs; **only companies with a large volume of production can keep these unit costs low.** High volume is required for automation of many engine and body operations (e.g. one automated factory can produce most of the motor blocks needed for one company. Big automobile producers obtain special discounts on buying materials and parts.	A. Advertising The auto industry is the nation's largest advertiser. GM ranks first, Ford secondly, Chrysler third, in terms of size of advertising budget. In 1965, the "Big Three" spent the following for advertising outlays in six major media: GM $173.0 million Ford 116.5 million Chrysler 80.0 million B. Other Forms of Promotion In addition to advertising, the auto companies spend an almost equal amount on other promotional outlays, such as racing programs, fairs, prizes, etc. In 1963 promotional outlays of the "Big Three" were as follows: GM $112 million Ford 101 million Chrysler 30 million High annual promotion [illegible] costs discourage new entry for 2 reasons: (1) new firms are financially unable to match these big sums; (2) even if they could, they may face large losses for many years because initial small volume of production may result in high unit costs.	Successful marketing of all but high-priced cars requires a minimum of 2500-3000 dealers per make of car. To support this number of dealer outlets and keep them on a profitable basis requires sale of a minimum number of 100,000 to 150,000 units per line per year. New firms find it difficult to obtain and support necessary number of dealers because of: (1) small volume of sales in initial years of operation; and much of dealer's income comes from servicing cars already on the road. The "Big Three" have a decided advantage over the independents in the number of dealers they can support. As of Jan. 1, 1964, net dealer outlets by company were as follows: GM 13,745 Ford 7,668 Chrysler 5,980 Amer. Mtrs. 3,100 Studebaker 1,832 The larger the auto firm, the more control it has over dealers in terms of standards of show room, repair facilities, quotas, etc.

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* This table summarizes the reasons for economies of scale in car manufacture--cost per car declines for higher and higher levels of output.

TABLE 3

BARRIERS TO ENTRY IN AUTOMOBILE MANUFACTURING: PRODUCT DIFFERENTIATION*

Advertising and Promotion	Well-Diversified Product Line	Initial Cost Disadvantage	Resale Value of Used Cars
Because of customer loyalty to the "Big Three," a new firm would need to spend more on advertising and sales promotion than the going firms, to convince people to prefer its model over others.	Firms must maintain a well-diversified product line. In 1965, the "Big Three" differentiated their product into four loosely defined price classes: 1. low: $2,000-$2,400 2. low-med.: $2,500-$3,000 3. med.-high: $3,200-$4,000 4. high: $4,400-$7,500	To attain an efficient-sized production volume in each product line, **entrants must either:** 1. sell at a lower price, 2. or increase sales promotion.	Because of brand loyalty and greater consumer confidence in older firms, there is less depreciation in trade-in value for cars produced by the "Big Three."
Since a new firm would not sell as many cars at first as the established firms, advertising costs per car would therefore be higher for a new firm.	For efficient production, a new entrant must produce 10 to 20 per cent of low price market and 30 to 60 per cent of upper-middle price market.	This means a new firm would expect to lose $200 million or more a year until he built up sufficient volume of sales to reduce unit costs. This could take up to 10 years to accomplish.	GM has generally the lowest depreciation. The smaller producers take the largest loss in value. To win public acceptance of their models, and to sell cars of new producers, dealers have to offer large discounts or high value on trade-ins.
	Based on the experience of Kaiser Motors, who discontinued production in 1963, independents with limited lines cannot survive.		
	In 1966, American Motors, having concentrated mainly in low-priced cars, was faced with severe losses as consumer tastes shifted to higher-priced luxury models.		

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* This table summarizes ways product differentiation creates barriers to entry in auto manufacturing.

TABLE 4

BARRIERS TO ENTRY IN AUTOMOBILE MANUFACTURING: CAPITAL REQUIREMENTS*

INITIAL CAPITAL COSTS	CAPITAL OUTLAY FOR TOOLING	CAPITAL OUTLAY FOR NEW PLANT AND EQUIPMENT	CAPITAL OUTLAY FOR ESTABLISHING A SYSTEM OF DEALERS & DISTRIBUTORS
1. U.C. Prof. Joe Bain estimated an efficient-sized operation required an initial investment of from $250 to $500 million (in 1956) plus at least $150 million for "break-in" losses.	Tooling for new models constitutes a major capital expenditure of the auto industry each year. In 1964, expenditures of the "Big Three" for special tools, dies, jigs, etc. were $1,237 million.	There is substantial annual investment in plant for replacement and modernization. In addition, growth in demand for autos has required outlays for new capacity.	High initial costs are involved in establishing a system of dealers and distributors. According to Romney's estimate in 1958, this would require $326.2 million to be distributed as follows:
2. Am. Motors' Ex-president, George Romney estimated that a new company with an output of 250,000 cars per year required $576 million (in 1958 prices)-including 5 year losses-to enter the industry.	These special tools are amortized over relatively short periods of time (1 year) because of rapid changes in automobile styling and design. Amortization charges for special tools for the "Big Three" in 1964 totaled $921 million.	In 1965, expenditures of the "Big Three" for new plant and equipment was as follows: GM $1,250 million Ford 635 million Chrysler 500 million Approximately 51 per cent of the funds were for expansion of capacity and 49 per cent for replacement and modernization.	$262.5 million for 3,500 domestic dealers $ 18.7 million for 350 Canadian dealers $ 45.0 million for 3,000 export distributors. Further capital outlays are frequently necessary to rebuild an existing dealer system. For example, in 1962, Chrysler found it necessary to rejuvenate its dealers outlets, and invested nearly $100 million on this program alone.
3. Difficulty of raising initial capital funds. Bankers and investment houses are reluctant to participate in financing of new auto concerns. Kaiser was able to finance entry in 1946 because of: (1) capital resources of the Kaiser enterprises, and (2) a timely loan from the RFC. Kaiser's difficulty in financing 1949 models was an important reason it was forced out of the auto industry.			

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* This Table summarizes initial investment costs of going into car manufacturing, and year-to-year additional

TABLE 5
BASES AND REASONS FOR PRODUCT DIFFERENTIATION IN THE AUTOMOBILE INDUSTRY

THE NATURE OF THE PRODUCT	ANNUAL MODEL CHANGES	ADVERTISING	SYSTEM OF FRANCHISED DEALERS
The automobile is inherently a differentiated product satisfying a wide range of consumer wants: reliability, economy of operation, speed, prestige, etc. In 1964, for example, the "Big Three" offered more than 400 varieties of autos. Combined with variations in transmissions, seating accomodations and other options, the number of possible models can run to many millions.	The primary objective of annual model changes is to make the consumer aware that this year's model is identifiably different from last year's model and to persuade him through psychological suggestion to turn in his old model for a new car. This attempt to hasten obsolescence is called "planned obsolescence." In the 1950's, differentiation was achieved more by means of eye-catching eccentricities of adornment or configuration. Since the 1960's, however, auto manufacturers have tended to imitate one another's styling and differentiate their cars in less obtrusive or more functional details. Similarities usually are more striking than differences.	Advertising promotes product differentiation in two respects: 1. by building consumer loyalty to a given make car through stress on a firm's reputation and reliability; 2. by creating an image that it is "smart" and "modern," a sign of affluence to own the latest model car. If a new model is a status symbol," the old model is different from the new, and the difference helps promote the sale of new models.	A national system of franchised dealers fosters product differentiation in two ways: 1. by advertising and promoting a particular make car locally and; 2. by providing specialized repair servicing for each car make. The degree of success in differentiation is a function of the strength and size of the dealer system.

TABLE 6

FACTORS INFLUENCING DEMAND FOR NEW AUTOS

1 DISPOSABLE INCOME	2 PRICES OF NEW AND USED CARS	3 SCRAPPING OLD CARS	4 AVAILABILITY AND TERMS OF CREDIT
1. Family income is the main determinant of auto demand.	Price is an important determinant of demand but less important than income. Price elasticity is estimated to range between -1.2 and -1.5.	The replacement demand for junked cars is the backbone of the new car market.	Because of the magnitude of expenditures involved for a new automobile, the average consumer is usually not in a position to buy a new car unless credit is available at favorable terms.
2. Auto sales are highly affected by changes in general business conditions. When the economy is buoyant, the proportion of the consumer income spent for cars expands, and when it is depressed, the proportion of income contracts. The percentage of disposable income spent on autos was 5 per cent in 1961, a depressed year, as compared with 6.5 per cent in 1965, when the economy was booming.	The demand for new cars is influenced not only by the price of new cars but the price of old cars. When prices of used-cars go up, demand for new cars is affected favorably.	Since 1955, the scrappage rate has averaged about 7.5 per cent of total cars, but the rate fluctuates with the business cycle.	Consumer auto credit for purchase of cars tripled from $9.8 billion in 1954 to $27.5 billion in mid-1965.
	In prosperous times, price is a less important factor than in depression periods. In 1964, for example, although the price of the basic car remained steady, consumers spent more for cars, trading up to larger, better equipped, and more expensive cars.	Because of the steady increase in the number of cars sold in the past decade, scrappage has increased from a 1955-60 average of 4 million units a year to 5.5 million in 1964. It is estimated that 6 million cars will be scrapped in 1966.	

TABLE 6
(continued)
FACTORS INFLUENCING DEMAND FOR NEW AUTOS

5 MODEL CHANGES	6 POPULATION GROWTH	7 POPULATION SHIFTS	8 CONSUMER CONFIDENCE
Annual model changes, combined with large-scale advertising campaigns, are an important factor in compelling the consumer to replace their cars more frequently. Consumers' tastes are continually changing, influenced not only by the size of their income, but by many other factors, including psychic. In the mid-1950's, consumers preferred extreme ostentation; in the early 1960's, an economy car; in the mid-1960's, they turned back to luxury models.	The rate of population growth is an important factor influencing the demand for cars. Of particular importance is (1) the entry of young adults into the auto market, and (2) the growth of new families. Young people are coming of driving age at the rate of more than 3 million a year. Although they mostly buy used cars, they indirectly create a demand for new cars by: (1) contributing to the high rate of multi-car ownership in the country, and (2) keeping the price of used cars high in relation to new cars, thus enhancing the trade-in value of older cars. New families are expected to increase from 13.6 million units in 1964 to 17.1 million in 1970.	The recent shift of the population to suburbia has been an important factor in increasing the number and proportion of households owning two or more cars. This trend is expected to continue at least through the 1970's.	The close relationship between demand, personal income and consumer confidence in his earning ability in the immediate future is best demonstrated by the four-year boom in the auto industry during the years 1961-1965. During this period, the U.S. economy experienced one of the largest peace-time expansions, with personal incomes rising approximately 25%. Increased personal income and high consumer confidence in the economy's continued growth allowed auto sales to reach an all-time high.

TABLE 10
DISTRIBUTION OF NEW PASSENGER CAR OUTPUT BY PRICE LINES AND IMPORTS, 1960-1965
(in per cent)

PASSENGER CAR CATEGORY	1960	1961	1962	1963	1964	1965
Domestic						
Standards	68%	60%	56%	59%	58%	53%
Compacts	24	31	31	28	19	13
Sport Type Compacts	(1)	2	3	3	4	9
Intermediate	—	—	5	5	15	19
Imports	8	7	5	5	5	6
Total-Domestic & Imports	100%	100%	100%	100%	100%	100%

(1) less than 1 per cent

Source: U.S. Department of Commerce, Survey of Current Business, October 1965, p. 6.

TABLE 11
ANALYSIS OF COST OF OPERATIONS OF 4 MAJOR U.S. AUTO PRODUCERS, 1964
(in per cent)

COST OF OPERATIONS	General Motors	Ford	Chrysler	American Motors
Net Sales[1]	100.00%	100.00%	100.00%	100.00%
Cost of Goods Sold	73.27%	79.40%	79.40%	85.52%
Selling, General, Adm. expense	4.77	6.62	11.25	10.15
Depreciation and Obsolescence	2.91	2.51		1.25
Employee Retirement and Pension Plan	0.68	1.28		-----
Operating Profit	18.36%	10.19%	9.35%	3.09%
Other Income	1.14%	0.07%	0.51%	1.23%
Total Income	19.50	10.26	9.86	4.32
Other Income Deductions	.18	------	.46	0.18
Net Income Before Taxes	19.32%	10.26%	9.40%	4.14%
Income Taxes and Surtax	9.11%	4.99%	4.41%	1.50%
Minority Interest	-----	.04	-----	------
Net Income	10.21%	5.23%	4.99%	2.60%

[1] After deducting Federal excise taxes.

Source: Moody's Industrial Manual, June 1965.

TABLE 12
CORPORATION EXPENDITURES FOR ADVERTISING COMPARED WITH RECEIPTS, BY INDUSTRY, 1964.

(in billions of dollars)

Industry	Corporation Receipts (in billions of dollars)	Corporation Advertising Expenditures (in billions of dollars)	Advertisng as a % of Receipts
Total, All Industry	$1063.0	$12.10	1.1%
Mining	12.7	0.02	0.2
Manufacturing	453.2	6.61	1.5
Beverages Industry	69.7	1.82	2.6
Tobacco Manufacturing	5.4	0.33	6.1
Textile Mill Products	17.2	0.09	0.5
Chemical and Allied Products	34.5	1.51	4.4
Petroleum Refining	44.9	0.25	0.6
Primary Metals Industry	33.7	0.11	0.3
Fabricated Metal Products*	24.5	0.22	0.9
Motor Vehicles and Motor Equipment	35.5	0.23	0.6

* Excludes Machinery and Transportation Equipment

Source: Statistical Abstract of the United States, 1967, p. 809.

UNIT II
LESSON 8

READING #3

THE HISTORY AND MARKET STRUCTURE OF THE TELEPHONE INDUSTRY

I. THE DEVELOPMENT OF THE TELEPHONE INDUSTRY

Origin of the Telephone Industry

Alexander Graham Bell, credited as the inventor of the telephone, took out a patent on a transmitter in 1876, and on a magneto telephone in 1877. These patents were the basis for the Bell System's early and continued domination of the industry; they were perhaps the most valuable patents ever issued in this country.

Bell's experimentation with the telephone was financed by two friends, Thomas Sanders and Gardiner G. Hubbard. In 1875, Bell and his two backers organized a partnership, the Bell Patent Association, to develop and exploit the new invention. The association attempted, unsuccessfully, to interest businessmen in the financial possibilities inherent in the invention. Western Union, for example, in 1875, rejected the choice to buy the Bell patent for $100,000. In 1878, the association was incorporated in Massachusetts as the National Bell Telephone Company, and in 1880, the name was changed to the American Bell Telephone Company. The company was franchised to manufacture telephones and other equipment and to construct and operate telephone lines throughout the United States.

Early Competition with Western Union, 1877-1879

The Western Union Company was Bell's first real competitor. This company, already well established in the telegraph field, finally realized the competitive threat of telephones to its business, and acquired certain patents of Elisha Gray in an attempt to undermine Bell's position. It organized the American Speaking Telephone Company and employed Gray and Thomas Edison, who had invented a transmitter. With the resources of the Western Union behind it, the new company seemed at first to provide a formidable competitive threat. However, preeminence in the field swung to the Bell System when it acquired a still better transmitter, the Blake, in 1878.

Following a suit against Western Union for alleged patent infringement, the Bell System succeeded in forcing Western Union to retire from the telephone business. Several factors contributed to this victory: the Blake transmitter, the driving, aggressive genius of Bell's famous general manager, Theodore N. Vail; the Bell System's threat to enter the telegraph business; and support from the notorious Jay Gould, who was himself attempting to break Western Union's monopoly.[1]

The Development of the "A. T. & T."

Organization of Local Exchange Sources. Because the Bell System lacked the necessary funds to establish local telephone exchanges, the company encouraged the formation of local telephone exchange companies. In return for the use of the Bell patented apparatus, these companies were required to grant American Bell from 30 to 50 percent of their stock. Until 1927[2] the company maintained control over telephone instruments by renting rather than selling them to the operating companies.

By 1879, the American Bell had entered into 185 such service contracts with local operating companies, covering the more densely populated parts of the country. At first, five-year licenses were common because of the uncertainties of the new venture. As the industry grew, American Bell granted permanent licenses, taking in return additional stock interest in the licensees. These permanent contracts established American Bell's control over the subsidiary local companies, and allowed the Bell System to exploit its patents virtually in perpetuity.

Purchase of Western Electric. It soon became evident that in order to establish a unified nationwide telephone system, standardization of equipment was essential. Accordingly, in 1881, the American Bell Telephone Company acquired a substantial interest in the Western Electric Manufacturing Company of Chicago and changed its name to the Western Electric Company. The new company became the chief manufacturer and supplier for the Bell System, and conducted research and development deemed essential to telephone progress. From this time on, licensees were required to use equipment manufactured according to specifications which could only be met by Western Electric.

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[1] Federal Communications Commission, Investigation of the Telephone Industry in the United States. House Doc. 340, 76th Cong., 1st Sess. (Washington D.C.: U.S. Government Printing Office, 1939), pp. 123-125.

[2] Starting in 1927, all telephone instruments were sold to the operating companies.

Although the arrangement provided uniformity of design and ease of interconnections, it also tightened Bell's monopolistic controls on the industry.

Establishment of Long Distance Lines. The early operating companies provided only local telephone service. In 1884, improvements in techniques and the desire for an extended range of communication led the American Bell to set up inter-company connections which provided the basis for long-distance service.[3] In 1885, the Bell System established a new corporation, the American Telephone and Telegraph Company (often referred to as "Mother Bell") as a wholly owned subsidiary of American Bell Telephone Company, to operate the long-distance network connecting the local exchanges of the operating companies. Later, American Bell transferred all investments in its other subsidiaries to the American Company and eventually the two companies were consolidated.

In 1900, the American Company (A.T.&T.) became the parent holding company as well as the operator of the long-distance lines. In 1924, Bell Telephone Laboratories, Inc., was established to take over the engineering and a portion of the patent department of Western Electric. Thus, by the early 1920's, the Bell System had established the corporate structure which exists today. (See section: "The Telephone Industry Today.")

A Second Period of Competition

Rise of the Independents. Immediately after the expiration of the Bell patents in 1893 and 1894, numerous independent companies sprang up throughout the country. The competition was vigorous and the number of independent companies increased rapidly until 1907, at which time there were 2,986,515 independent stations[4] as compared with 3,132,063 Bell stations. The independents offered particularly severe competition in the middle-western states, where the Bell Company allegedly gave inadequate service at unsatisfactory rates. Many independents also developed in rural areas that had more or less been neglected by the Bell companies. Because of rate wars and new competitors, Bell's share of the telephone business declined, and so did income. Annual Bell revenues per station dropped from $88 in 1895 to $43 in 1907.

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[3] However, long-range communication had to await the turn of the century with the invention of Pupin's induction coil.

[4] A station is a place of residence or business where a complete assemblage of equipment for a telephone service is located.

A.T.&T. used a number of tactics to meet the new competition: it reduced telephone rates and improved services in the better established Bell companies; it attempted to prolong its patent monopoly by patenting improved features; it instigated patent infringement suits to force independents out of business; it refused to connect or sell telephones to certain independents. Despite these practices, a number of the independent companies survived, prospered, and grew to considerable size. A greater number, however, were forced out of business. Failure was due, in part, to Bell's predatory policies, but also to the independents' unsound financial practices.[5]

Period of Acquisition, 1907-1913. After 1907, the American Telephone and Telegraph Company came under banker control and instituted aggressive acquisition policies. In 1909, the A.T.&T. acquired a substantial stock interest in Western Union, an acquisition that was promptly criticized by Postal Telegraph--a major competitor of Western Union. It also made a determined effort to break up independent systems by the purchase of key properties. It was aided in this endeavor by the investment-banking houses which denied financial backing to distressed independents.

As a result, in 1913, the A.T.&T. was threatened with two antitrust suits, one for discrimination against Postal Telegraph in favor of Western Union, and one for alleged predatory practices against independents, particularly for its refusal to furnish satisfactory long-distance interconnections with the independents. In 1913, in an effort to end the threat of prosecution, the A.T.&T. made an agreement with the U.S. Attorney General. In this agreement, the Kingsbury Commitment, the A.T.&T. agreed to three changes in its acquisition conduct: (1) to sell its Western Union stock, thereby giving up its control of the Western Union Telegraph Company; (2) to interconnect with those independent telephone companies which met its equipment standards; and (3) to cease acquiring control of competing companies.[6]

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[5] Many independents, for example, in their eagerness for profits, neglected depreciation with disastrous financial results.

Problems of the Duplicate Exchanges. One of the major problems resulting from competition in the telephone industry was that of duplicate exchanges.[7] In 1912, the independents and Bell companies competed in 1200 communities, while independents fought each other in 600 other places. This proved a great source of inconvenience and expense to the public in a number of ways. It resulted in a duplicate network of telephone wires strung above the city streets, and it required subscribers to take service from two or more companies in order to telephone all other subscribers in the same town. This meant subscribers were required to have two or more telephones in their homes or businesses, two or more telephone books, not to mention two or more telephone bills. These drawbacks convinced the public of the need for unified telephone service. The telephone industry seemed to provide the best service when there was only one company in a local area--it was a "natural" monopoly.

At first the Bell Telephone and the Independents attempted to solve this problem by themselves. In 1909, certain independents agreed with Bell to divide their territory and arrange for the sale of property to one another. Following the threat of an antitrust suit in 1913, however, the Bell System stopped purchasing competing systems. Finally, in 1921, Congress passed the Graham Act which permitted consolidation of companies with the consent of the Interstate Commerce Commission. This, in effect, exempted the telephone industry from the Sherman Antitrust Act as far as consolidation of competing companies was concerned. As a result of the Graham Act, competitive warfare in the telephone industry came to an end. Telephone service was unified through acquisitions and mergers so as to leave a single company, either Bell or non-Bell, operating in each area.

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[6] Letter from N.C. Kingsbury, Vice-President of A.T.&T., to the Attorney General of the United States, Dec. 19, 1913. See Annual Report of the A.T.&T., 1913, pp.24-26.

[7] An exchange is a geographical unit of telephone service, usually embracing a city, town, or village and other environs.

Under the Hall Memorandum of 1922,[8] the Bell System adopted a policy of friendly cooperation with the independent companies, pledging to purchase only distressed companies and to dispose of minority interests in all independent companies outside the Bell System. Provision was made for interconnecting the facilities of the non-Bell companies with those of the Bell System, thus making possible the interconnection of nearly all telephones in the United States, as well as connections to the rest of the world.

Despite the restricted acquisition policy of the Bell System, by 1935 the A.T.&T. had succeeded in consolidating its control over more than 75 percent of the industry (Table 1). However, with peace and cooperation in the industry, it was possible for the remaining independents to prosper and grow. The declining number of independent telephone companies has been caused primarily by mergers among independents to achieve economies of scale, rather than Bell System acquisitions.

With the decline of competition in the telephone industry, the public realized the need of government regulations of prices and services. By 1919, 45 states and the District of Columbia had commissions whose duties included telephone rates and service regulation. Interstate telephone traffic was placed under the jurisdiction of the Interstate Commerce Commission as early as 1910. In 1934, the ICC's regulatory power over the telephone industry was transferred to the Federal Communications Commission. Because the operations of most independents are confined within the boundaries of one state, they are ordinarily regulated by only state or local agencies. The Bell System, however,

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[8] When in 1921 the Graham Act permitted telephone companies to merge or consolidate with competing companies, the Kingsbury Commitment was followed by the Hall Memorandum of 1922, which explained the Bell System's acquisitive policy. See letter from E.K. Hall, Vice-President of A.T.&T., to F.B. McKinnon, President of the United States Independent Telephone Association, June 14, 1922.

TABLE I

DISTRIBUTION OF TELEPHONES BETWEEN THE BELL SYSTEM AND INDEPENDENT COMPANIES

Year	Total Telephones	Bell System Telephones	Independent Company Telephones	Bell System Percentage of the Whole
1880	47,880	47,880	N.F.	100.0
1885	155,751	155,751	N.F.	100.0
1890	227,857	227,857	N.F.	100.0
1895	309,502	309,502	30,000	91.2
1900	835,911	835,911	540,000	60.8
1902	2,371,044	1,317,178	1,053,866	55.5
1907	6,118,578	3,132,063	2,986,515	51.2
1912	8,729,592	5,087,027	3,642,565	58.3
1917	11,716,520	7,326,858	4,389,662	62.5
1920	13,329,400	8,134,000	5,195,000	61.0
1925	16,935,900	11,910,000	5,025,000	70.5
1930	20,201,000	15,187,000	5,014,000	75.2
1935	17,424,000	13,573,000	3,851,000	78.1
1940	21,928,000	17,484,000	4,444,000	79.7
1945	27,867,000	22,446,000	5,421,000	80.5
1947	34,867,000	28,507,000	6,360,000	81.8

Sources: Figures for 1890-1900 are from the Federal Communications Commission, _Investigation of the Telephone Industry_, 1939, p. 129. Figures for 1902-1917 are from _U.S. Census of Electrical Industries, Telephone and Telegraphs_. Figures for 1920-1947 are from the _U.S. Statistical Abstract_. The series are not strictly comparable.

is subject to regulations by both state commissions and the FCC.

II. THE TELEPHONE INDUSTRY TODAY

The Bell System is by far the dominant segment of the telephone industry today. In 1965, it served approximately 76 million phones or 84 percent of the total, as compared with 15.2 million phones or 16 percent of the total for the independents (Table 2). Although the independents are dwarfed by the mammoth Bell System, they nevertheless form a comparatively large industry in themselves. The number of telephones they served in 1965, for example, were more than the total number of phones in Britain and France combined. The biggest of the independents, General Telephone and Electronics Corporation, served more than seven million firms (Table 2) and was, in fact, the 28th largest company in the nation.[9]

The Bell System's Corporate Structure

The Bell System is a holding company, consisting of the American Telephone and Telegraph Company, 23 affiliated regional exchange companies operating throughout the United States, Western Electric, and the Bell Telephone Laboratories. Each company has the primary responsibility of providing local telephone service and interconnections between communities within its own territory. The A.T.&T. interconnects the territorial operating companies by means of its long-distance lines; affords a central advisory service; operates the Bell Telephone Laboratories devoted to research, development, and design in the communications field; owns and operates the Western Electric Company, the System's manufacturing and supply unit; and furnishes the affiliated companies with engineering assistance and operating advice as well as assistance with legal, accounting, and financial matters.

The A.T.&T. owns and operates outright 16 of the 23 operating exchange companies, has a majority control in four others and a minority interest in three (Table 3). In addition, it completely owns the Western Electric Company, the nation's ninth largest

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[9] See Fortune's Directory of the 500 Largest Industrial Corporations, 1964.

TABLE 2

SHARE OF TELEPHONE SERVICES BY A. T. & T. AND INDEPENDENTS, 1965

System	No. of operating companies	Number of Telephones	Percentage of Total
Bell System (American Telephone and Telegraph)	22	75,866,000	83
Leading Bell Operating Companies			
Pacific Tel & Tel		8,044,000	
New England Tel & Tel		3,893,000	
Mountain States Tel & Tel		2,946,931	
Pacific Northwest Bell Tel		1,820,032*	
Southern New England Tel		1,584,000	
Cincinnati & Suburban Bell Tel		694,810	
Independents	2500	15,190,000	17
Leading Non-Bell Systems			
General Tel & Electronics		7,176,000	8
Western Power & Gas		655,048	
United Utilities		784,778	
Total Telephone Industry		91,056,000	100

* 1964 figures

Source: Clark, Dodge, & Co., Industry Review Service, March 15, 1966, appendix.

industrial corporation, and shares control of the Bell Telephone Laboratories with Western Electric Company. It controls 84 percent of the nation's local telephone service and 98 percent of its long-distance lines. Through its manufacturing subsidiary, Western Electric, it accounts for 90 percent of the nation's output of telephone equipment.

The president of the A.T.&T. is empowered to vote its stock in the operating companies and to select the directors and officers of these concerns. The parent is thus in direct and complete control of the entire telephone system. In actuality, however, the associated companies are largely autonomous units, planning their own construction and expansion, deciding what services will be offered, and fighting their own rate battles with state and local regulatory agencies.

In 1965, the Bell System controlled over $34 billion of gross assets, one of the largest aggregations of capital and resources ever assembled by a private, non-financial company in history. This sum was an amount only $10 billion short of equalling the value of the gold held by all of the world governments in that year. The Bell System is a publicly-owned corporation, and the number of stock holders (2,700,000) is larger than the sum of stockholders for the next three largest companies.[10]

The main sources of A.T.&T. income are from dividends paid it by the associated telephone companies, from charges A.T.&T. makes for the services rendered to subsidiaries , from the earnings of its long-distance lines, and from the profits of Western Electric. This income is derived ultimately from the rates paid by subscribers for telephone service. Although the corporate structure of A.T.&T. is much simpler than that of other utility-holding company systems, the relation of the parent company to

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[10] In 1965, General Motors, in second place, had 1,309,419 stockholders; Standard Oil Co. of New Jersey ranked third with 723,000 stockholders; and General Electric was in fourth place with 525,000.

TABLE 3

BELL SYSTEM COMPANIES, 1965

Affiliates	Capital Stocks Owned by A.T.&T. Co.		Advances from A.T.&T. Co.*
	% Owned	Equity	
Principal Telephone Subsidiaries:			
New England Tel & Tel Co	69.3	$ 553,795	$ 105,000
New York Tel Co	100.0	2,037,546	-------
New Jersey Bell Tel Co	100.0	801,547	78,400
Bell Tel Co of Pennsylvania	100.0	864,366	65,000
Diamond State Tel Co	100.0	63,370	3,775
Chesapeake & Potomac Tel Co	100.0	179,944	24,300
Chesapeake & Potomac Tel Co of Md.	100.0	398,590	41,200
Chesapeake & Potomac Tel Co of Va.	100.0	404,356	67,300
Chesapeake & Potomac Tel Co of West Va.	100.0	144,668	15,800
Southern Bell Tel Co	100.0	2,166,592	135,900
Ohio Bell Tel Co	100.0	695,771	104,000
Michigan Bell Tel Co	100.0	643,128	34,700
Indiana Bell Tel Co Inc	100.0	297,828	8,600
Wisconsin Tel Co	100.0	315,040	22,700
Illinois Bell Tel Co	99.3	1,160,935	46,600
Northwestern Bell Tel Co	100.0	724,048	50,900
Southwestern Bell Tel Co	100.0	2,140,624	88,000
Mountain States Tel & Tel Co	86.7	768,771	23,000
Pacific Northwest Bell Tel Co	89.1	433,359	21,900
Bell Tel Co of Nevada	**------	---------	-------
TOTAL		$16,751,271	$1,051,775
Subsidiaries Not Consolidated:			
Bell Telephone Laboratories, Inc ***	50.0	$ 40,000	-------
Western Electric Co, Inc	99.8	1,491,218	-------
195 Broadway Corp	100.0	29,051	$ 2,675
Other****	-----	54,649	2,423
TOTAL		$ 1,614,918	$ 5,098
Other Companies			
Southern New England Tel Co	18.3	$ 41,587	$ 17,600
Cincinnati & Suburban Bell Tel Co	28.4	24,346	2,100
Bell Tel of Canada	2.5	18,855	-------
TOTAL		$ 84,788	$ 19,700

---

* Thousands of dollars

** Wholly owned subsidiary of Pacific Tel & Tel Co (Equity $76,801,000; Advances $1,100,000)

*** Remainder owned by Western Electric Company

****Includes investments of principal telephone subsidiaries

Source: A.T.&T., Annual Report, 1965, p. 27.

its subsidiaries is much the same in all such holding companies.

The Independents

While the Bell System serves the larger cities, for the most part the independent companies provide local services in the smaller urban and rural communities. At the end of 1965, the independents operated 15.2 million telephones, or 17 percent of the United States total. (Table 2) They covered one-half of the nation's geographic area, operating in 49 of the 50 states (excluding Delaware). While they serve twice as many communities as does the Bell System, the total size of the territory they serve approximates that served by the Bell System. States that have the greatest number of independent stations are California (nearly 2 million), Ohio (over 1 million), Pennsylvania, Illinois, Indiana, New York, Texas, and North Carolina (over 500,000 each).

In 1965, the independents had $6.8 billion of plant investment and $1.7 billion of revenue. Only 144 of the independents, however, had more than $1.0 million revenue. There are about 50 independent companies with common stock publicly held, but only about a dozen of them are sufficient in size to interest large investors.[11]

As a result of acquisition and mergers among independents, the number of non-Bell companies declined from about 5,000 in 1955 to about 2,400 in 1965. The need to mechanize to improve efficiency and provide the better service demanded by customers has been the primary force behind the increasing concentration. The large plant investment required for conversion to dial systems, for instance, was often too heavy a financial burden for the small companies to assume. With the coming of more sophisticated communications facilities, such as electronic switching, the trend may accelerate in future years.

A by-product of these mergers has been the formation of the independent "system," a number of operating companies, often widely scattered, controlled by one holding company. These "systems" not only have the advantage of greater financial resources, but also are less reactive to adverse regional economic changes. Dominant among these holding companies is General Telephone and Electronics, which accounts for nearly half of the independents' total (Table 1) and also engages in extensive manufacturing activities. Other systems, all considerably smaller than General Telephone, include United Utilities, Western Power and Gas, Continental Independent Telephone, and Mid-Continent Telephone. Among the larger individual operating companies are Rochester Telephone, Hawaiian Telephone, Carolina Telephone and Telegraph, and Intermountain Telephone.

---

[11] Clark, Dodge, & Co., Telephone Utility Industry, March 15, 1966, p. 4.

III. MARKET CHARACTERISTICS: SUPPLY CONDITIONS

The demand and supply characteristics of the telephone industry explain why it has become a public utility and the regulatory problems connected with establishing "just and reasonable" rates.

A "Natural" Monopoly

For two reasons the telephone industry is basically a natural monopoly--an industry in which it is most efficient for one supplier to produce the total market supply. First, the greater the number of subscribers connected through the switchboard of one company, the more valuable is the service to any one of the subscribers. That is, telephone service is best when all subscribers are connected to a single switching system.

Second, the telephone industry is potentially an increasing cost industry, i.e., an increase in the number of subscribers involves greater fixed and operating expenses per subscriber and, therefore, higher costs per unit of service. Increasing costs may be attributed to the following factors:

(1) As telephone systems grow larger, they generally need to furnish higher quality service. For example, the demands of subscribers in metropolitan areas are much more complicated than those in rural communities. An urban exchange generally contains a great deal more expensive equipment than smaller communities.

(2) For each new line added to the system, each of the lines already connected must be connected to the new line. Thus, new telephone installation augments the complexity of switchboards and the number of exchanges.

(3) Maintenance expenses increase with additional subscribers; in general, maintenance expenses average higher in larger cities than in smaller communities.

Long-Run Decreasing Costs. Over a long period of time, increasing cost tendencies have been offset by technological improvements which have made the communications network more efficient and hence have reduced unit costs.[12] These cost-saving improvements have originated out of the laboratories of both the Bell System and independents. Among the improvements in the last decade and a half which have contributed to decreasing costs are the following:

1. The replacement of the traditional wire and cable for voice and written communications with coaxial cable facilities. When the first commercial coaxial cable was installed in 1926, it could carry 480 simultaneous conversations which was at that time nothing short of spectacular. Recent technological improvements in the coaxial cable, however, have made it possible to carry on as many as 32,000 simultaneous conversations.

2. The steady and long continued program of replacing manually operated switchboards with dial equipment in local exchanges, coupled with the introduction of electromechanical switching equipment for long-distance operations. Today, most domestic telephones are dial operated for local calls, while 87 percent of the Bell System is equipped for direct distance dialing. More than half of all long-distance calls are dialed straight through in a few seconds' time. In the majority of cases, the calling number is also automatically recorded, so that it is unnecessary for an operator to request it for billing purposes.

---

[12] Strictly speaking in the sense that economists use the term, a decreasing cost industry is one in which an increase in the size of plant produces the economies of cost. Economies arising from technological improvements over the course of time are not included in this category. However labeled, these cost reducing factors are significant.

3. The installation of new electronic switching (now in 12 cities, including Detroit) to replace present electromechanical switching facilities.[13] Operating economies derived from this important technological achievement are expected at least to match those derived from the conversion to dial operations. Electronic switching systems will also permit abbreviated dialing of frequently called numbers and automatic transfer of calls to another number.

Research and Development. The telephone industry spends large sums annually on research and development in order to improve and expand communications service and at the same time hold down operating costs.[14] It wasn't long ago that the telephone system was composed of thousands of local exchanges filled with women who answered to the name, "Central." Each office was an entity to itself, connected to other offices by a few strands of wire capable of transmitting only voice and telegraph information. A long-distance call had to be relayed from office to office, often requiring a half hour or more for completion. Today, the system is a complex mass of wires, circuits, and cables, best described as a continent-wide computer. Highly efficient, it is capable of transmitting information not only in the form of voice, but also in the form of data and picture--either alternatively or simultaneously.

---

[13] Electronic switching was first installed on a regular basis in 1965, after both the A.T.&T. and the independent segment of the industry tested experimental installations. The complete changeover to E.S.S. may require about $21 billion of new investment on the part of A.T.&T. alone and take about 35 years.

[14] The research and development data provided by McGraw-Hill is not released for the telephone industry because it would be revealing confidential information about the American Telephone and Telegraph, which represents about 95 percent of the industry total. According to Charles F. Phillips, Jr., The Economics of Regulation (Richard D. Irwin, Inc.: Homewood, Ill., 1965), p. 671, the Bell Labs have an annual budget of approximately $350 million. Of this amount, $80 million comes from the A.T.&T. (45 percent from the license contract payments, and 55 percent from the Long Distance Department), $80 million from Western Electric, and the remaining $190 million from the government for military research and development. The $350 million spent by the Bell Labs compares with $120 million spent by the steel industry in 1965, $90 million by the non-ferrous metals, $242 by the drug and medicine industry, and $360 million by the petroleum refining industry.

In days past, only wires were used for telephone communication. Today, transcontinental microwave radio systems are being used as an alternate means of providing circuits for long-distance telephone transmission. Such circuits have the capacity to handle 6,000 telephone conversations simultaneously or six television programs. Moreover, they can transmit the voice farther, faster, and clearer than over the wire. In the near future, laser light beams[15] appear to have important possibilities for carrying telephone calls, data, and pictures in great quantities--perhaps ten thousand times more than can be handled over coaxial cable or microwave systems today. Moreover, they are believed capable of transmitting the voice clearer and farther than by any previous method.

The bulk of the research in the telephone industry is carried on by Bell Telephone Laboratories of the A.T.&T. and the General Telephone Electronics Laboratories of G.T.&E.[16] The Bell Lab is responsible for the discovery of the transistor and development of Telstar. The G.T.E. Laboratories has done major work in laser technology. Over the years, the smaller, independent companies have also initiated many important technological developments. The first practical dialing system, the headset, selection ringing, automatic toll ticketing and direct operator dialing for long-distance calls were all introduced by independents. In 1962, a subsidiary of Continental Telephone, one of the small independent operating companies, opened the first electronic exchange on a commercial basis.

Because the telephone industry has a very fast moving technology in communications, obsolescence is an important structural problem of the industry. Rapid obsolescence of equipment constitutes a large element of cost of new service. For example, in 1965, provision for depreciation by the Bell System amounted to 14.7 of gross revenue, representing 5.1 percent of average investment in depreciable plant.

---

[15] Laser stands for Light Amplification by Stimulated Emission of Radiation. Because of the ability of laser devices to produce extremely narrow and concentrated light beams, its waves can be controlled in the same way radar waves are regulated, and these are capable of transmitting long-distance signals.

[16] Standard and Poor, Telephone Industry Survey, April 28, 1966, pp. T-10 and T-11.

Large, Fixed Investment. The telephone industry requires large capital investment in the form of physical plant and expensive, durable equipment. Total investment of the A.T.&T. in 1965 stood at more than $33.5 billion--larger than any other company in the world. In addition, it was adding an additional $3.9 billion into new plant and equipment (approximately 11.1 percent of its gross plant), a sum almost as much as the Federal Government spent that year on all its foreign aid programs. One result of the large capital requirement has been a low annual rate of capital turnover (the rate of annual revenues to total investment) compared with other industries (Table 4). In 1965, the magnitude of the Bell System's fixed costs amounted to approximately 59 percent of total revenue, as opposed to about 21 percent for manufacturing and about 46 percent for electric utilities.[17]

The financial problem of the telephone industry is one of raising large amounts of money for fixed capital rather than frequent amounts of working capital. Financing has been secured from sale of stocks and bonds and from earnings. Larger amounts of stocks have been sold to the public by the A.T.&T. than by any other company. During the postwar period, the Bell System accounted for 10 percent of all monies raised by United States corporations, in terms of sales of stocks and bonds.[18]

IV. DEMAND CONDITIONS

Diversity of Demand. One important demand characteristic of the telephone industry is that consumers demand instantaneous and uninterrupted service, but at the same time their demands for service differ considerably throughout the day. (Figure 1) The demand for service during the hours 9 a.m. to 6 p.m. is more than double that for the hours 7 p.m. to 12 a.m. On the other hand, during the midnight hours 1 a.m. to 6 a.m., demand for service is comparatively negligible.

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[17] The New York Times, May 28, 1966, p. 24.

[18] Standard and Poor, Telephone Industry Survey, April 28, 1966, p. T-13.

TABLE 4

INVESTMENT IN FIXED PLANT REQUIRED TO PRODUCE $1.00 OF NET SALES PER YEAR, VARIOUS INDUSTRIES, 1940

Utility Industries	
Class I railroads	$6.13
Electric	5.80
Manufactured gas	4.63
Urban transportation	4.57
Natural gas	4.31
Mixed gas	4.08
Bell telephone system	4.06
Telegraph	3.38
Greyhound bus	1.40
Air lines	.87
Other Industries	
Anthracite and bituminous coal	2.70
Petroleum	2.50
Non-ferrous metals	1.90
Railway equipment	1.88
Iron and steel products	1.66
Chemical manufacturing	1.15
Tires and rubber goods	.72
Electrical equipment	.49
Farm implements	.45
Automobiles and parts	.37
Aircraft parts	.35
Retail stores	.32
Meat packing	.25

Source: Ernest R. Abrams, "The Product of the Dollar in Various Types of Business," _35 Public Utility Fortnightly_, June 21, 1945, p. 795.

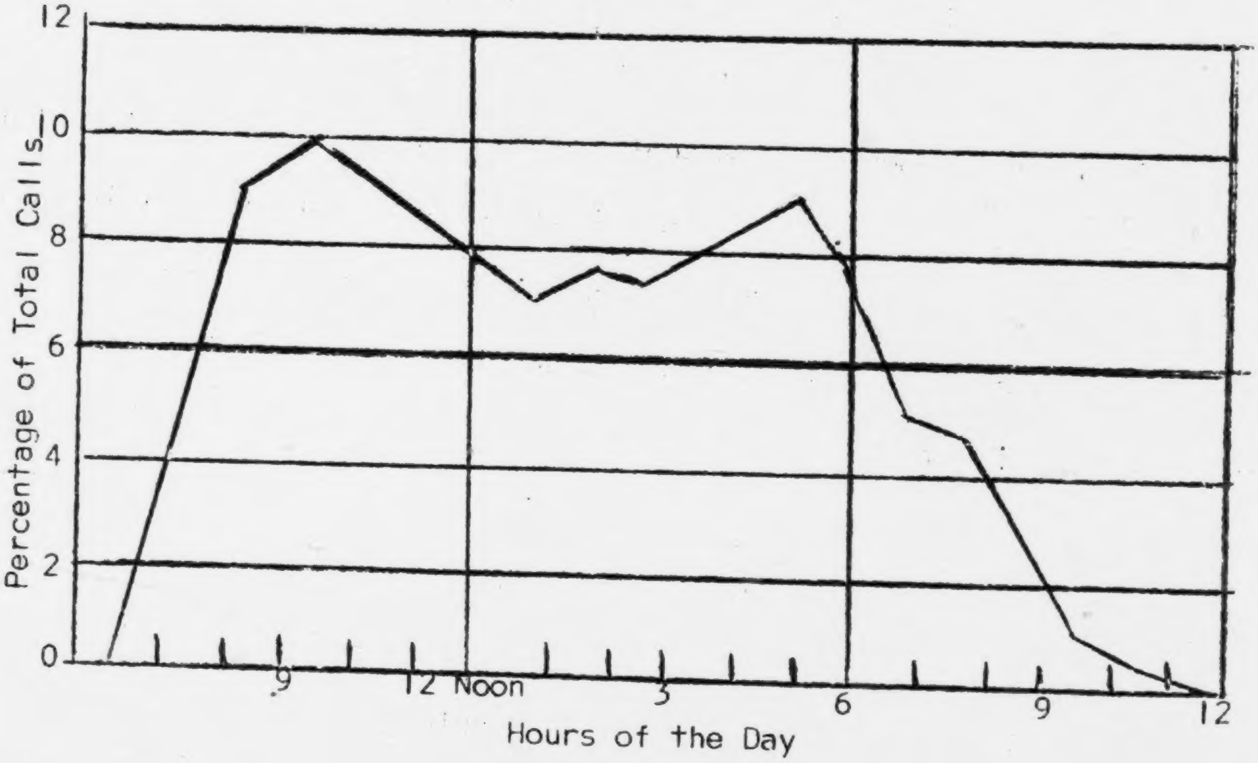

Fig. 1. DAILY LOAD CURVE OF A TELEPHONE UTILITY

Distribution of Calls During Day

In contrast to the sale of a commodity that can be produced and stored before it is distributed and consumed, the telephone industry sells a service which must be consumed as it is produced. Because of the nonstorability as well as monopoly of supply, the telephone industry must have adequate plant to satisfy the instant and continuous demand of customers during peak periods of the day.

Wide fluctuations of demand during the day influences the structure of the industry in two important ways: (1) it creates the problem of large, unused capacity except for periods of peak demand and (2) it aggravates the need for large fixed capital investment, since capital equipment must be sufficient to meet peak load needs. The need to utilize plant as fully as possible, and thereby reduce overhead costs makes price discrimination highly attractive to the telephone industry.[19]

---

[19] This will be discussed more fully in Part III, under Structure of Rates.

Elasticity of Demand. For most people, the telephone is considered a necessity. Even if rates should go up or if a business recession occurs, telephone customers are likely to cut expenditures on other goods and services before reducing their outlays for telephone services. Consequently, demand for basic telephone service is relatively inelastic both with respect to changes in telephone rates and personal income.

Studies have been made of the income sensitivity of the telephone industry to dollar sales as compared with other utilities and industries. (Figures 2 and 3) Figure 2 shows that with the exception of the electric and gas utilities, the telephone industry is less adversely affected by changes in income than all other industries. This is true for both residential and business usage of the telephone; demand for service by both buyers and users is only moderately affected by fluctuations in general business activity. Residential subscribers, who hold approximately 70 percent of the telephones in service, have become too accustomed to the telephone to consider the service a luxury. Commercial and industrial usage of the telephone also does not decline appreciably unless curtailment in business becomes severe. During the mild postwar recessions in 1948-49, 1953-54, 1957-58, and 1960-61, the telephone industry showed itself relatively immune to cyclical declines in business activity. The growth trend in revenue and net income continued to mount during each of these recession periods.

Nevertheless, Figure 3 shows that demand for long distance service is more sensitive to income and price change than is demand for local service. The long distance service shows considerable variations in revenue over the business cycle, while local service sales are comparatively stable. Long distance revenues also show greater sensitivity to rate changes than local revenues. For example, there have been three major rate reductions in long distance calls since 1959, and in each case the volume of long distance rates increased markedly following the reduction of rates. In fact, the $100 million long distance rate reduction in 1965 was followed by a 12 percent increase in long distance messages over 1964. On the other hand, local service rates have climbed steadily upward in recent years, but because of an inelastic demand for such service, local revenues have not declined significantly.[20]

Demand Growth. The telephone industry has been one of the outstanding growth areas of the American economy. In the 1954-64 decade, this growth was considerably more rapid than that of the economy as a whole, as shown in Table 5 below:

TABLE 5

COMPOUND ANNUAL GROWTH RATES, 1954-1964.

Category	Percentage Growth
Economy as a whole	
Population	1.7
Gross National Product (Constant Dollars)	3.6
FRB Index of Industrial Production	4.4
Corporate Earnings	6.2
Telephone Industry	
Operating Revenues	8.3
Plant Investment	9.2
Number of Telephones	5.3
Daily Conversations	5.5
Net Income	11.9

Source: Clark, Dodge & Co., Industry Review Service, March 15, 1966, p. 2.

The underlying factor for this rapid growth has been an expanding population, the growing propensity of individuals to communicate with each other, the geographical dispersion of United States Industry, the increasing mobility of people, and the great emphasis on research and development by the telephone industry. The expanding affluence of society has also contributed to the growth of industry in recent years. For example, the rise in personal income has resulted in the number of residential extension phones more than tripling to 15 million during the twelve-year period 1953-1965.

---

[20] Growth in demand for telephone service may also be a contributing factor.

Although growth of the Bell System has been short of spectacular in the past two decades,[21] the independent telephone companies, on the whole, have fared relatively better than the Bell companies, as shown in Table 6. In part, this reflects the fact that the independent companies operate largely in suburban and rural areas, which have experienced a higher rate of growth than the urban areas, where the Bell System is dominant. It is also indicative of the fact that most of the independents have lagged behind the Bell System in providing the most modern equipment and techniques. During the "catching up process," independent growth has been and probably will remain faster than that of the Bell System.

TABLE 6

COMPARATIVE ANNUAL COMPOUND GROWTH RATES OF THE INDEPENDENTS AND THE BELL SYSTEM, 1954-64 AND 1959-64

	Compound Annual Growth Rates			
	Bell System		Independents	
Category	1954-64	1959-64	1954-64	1959-64
Number of telephones	5.2%	4.5%	6.0%	5.8%
Average daily conversations	5.1	4.7	7.1	6.5
Plant investment	8.7	7.9	13.1	11.7
Operating revenue	8.0	6.9	11.0	10.6
Net Income	11.7	8.3	13.1	13.3

Source: Clark, Dodge & Co., Industry Review Service, March 15, 1966.

The telephone industry has reached a relatively high saturation of telephones in this country. In 1965, there were about 50 telephones per 100 population in the nation. As recently as 1957, this figure was 37 per 100. Industry forecast to 1970 indicate the proportion rising to nearly 60 per 100, reaching 120 million phones in service. By the year 2,000, it is anticipated there will be more telephones than people.

---

[21] Bell System telephones increased nearly 3 1/2 times, and long-distance conversations more than 4 1/2 times during the period 1955-65.

The Bell System has been approaching a saturation rate faster than the telephone industry as a whole. It is now serving 85 percent of all households in the area where it operates as compared with 50 percent for the industry as a whole. This means that in the near future, the A.T. & T's basic market--"the telephone business"--will be completely saturated. The executives of the A. T. & T. have been aware of the problem since the middle 1950's and have attempted to offset the potential slow-down in growth by expanding the telephone industry horizontally instead of vertically. As one A.T. & T official expresses it, "this means selling the U.S. corporations the idea that the telephone system can be used for far more than just telephone calls.[22]

Today the Bell telephone system no longer provides only the simple service of voice communication between two telephone instruments that characterized its operations in the past. Instead, it now provides such diverse telephone services as computer data, fascimile-photograph transmission, and television signals, in order to meet the growing need for fast, reliable, convenient and accurate transmission of all forms of communication.[23] The fastest area of growth has been the field of data communications. For example, some 45,000 business data processing machines were connected by phone lines in 1965, compared with 15,000 in 1964. By 1970, the volume of data transmissions--"machine talk" is expected to equal or exceed that of "people talk." It is the expansion of the Bell System into the data processing applications which has brought them into direct competition with many of the communications carriers, notably Western Union.

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[22] Wall Street Journal, Dec. 16, 1965, p. 11.

[23] For example, the A. T. & T. may provide a business with wide area telephone service (WATS) which would permit the firm to make an unlimited number of long distance calls to a particular area at a fixed monthly charge; it may provide a business with a microwave communications system (TELEPAK) for bulk transmission of voice and written communication; it may lease a long distance "tie-line" between cities; or it may provide teletypewriter exchanges service (TWX).

In summary, although the year-to-year gains in telephone-instrument additions may be at a slower rate in the future, additional stimulation to growth through new services may well permit the industry to enjoy as rewarding a growth period in the next two decades as in previous ones. Aside from the present growing market for speedy flow of data, untapped markets exist for various new voice and fascimile service, regular airline-to-ground service, expanded mobile-unit use, and transmission of educational material for classroom television.

FIGURE 2

Income Sensitivity For Sales of Various Industries
(1929-1960 Average, Growth Trend Removed)

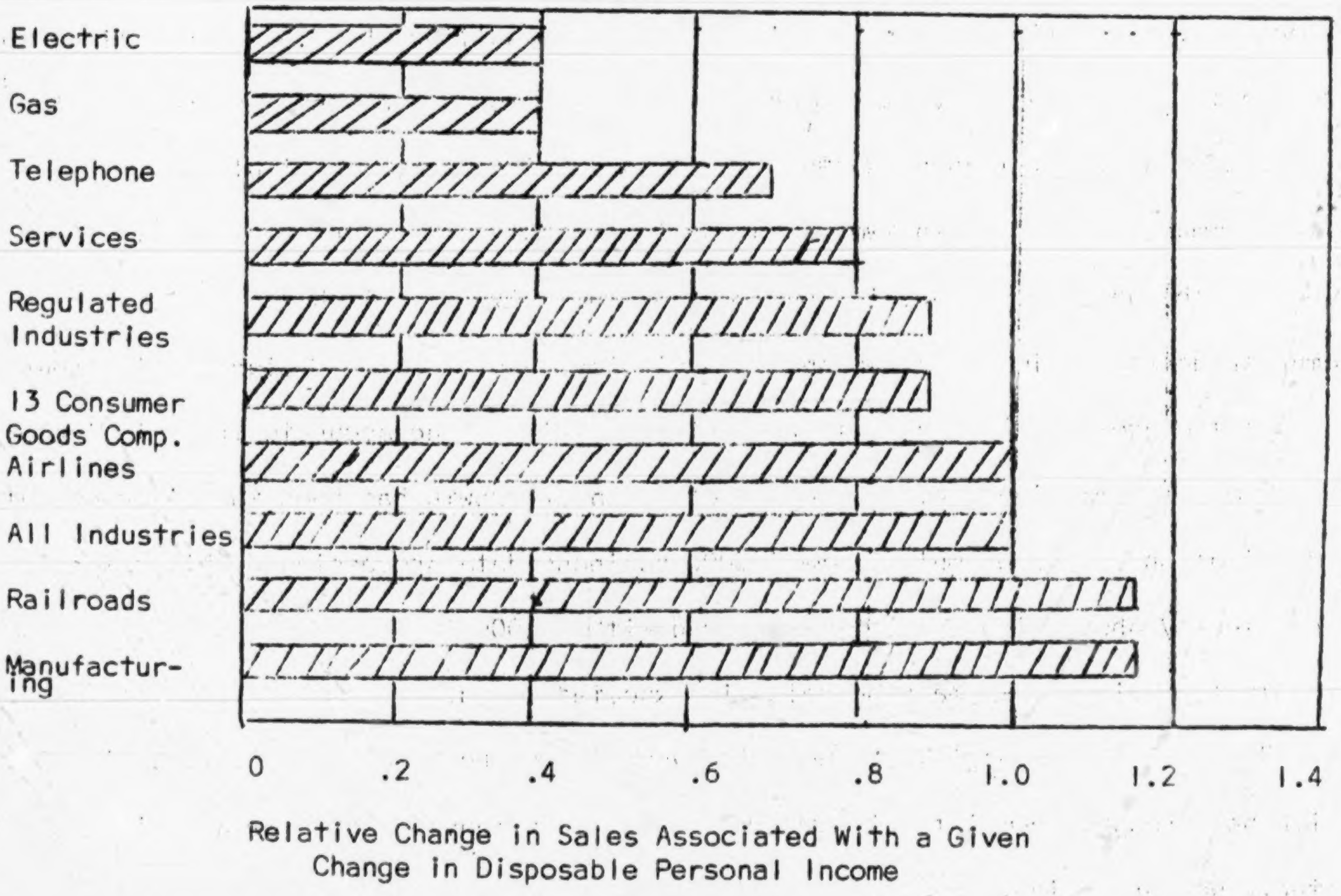

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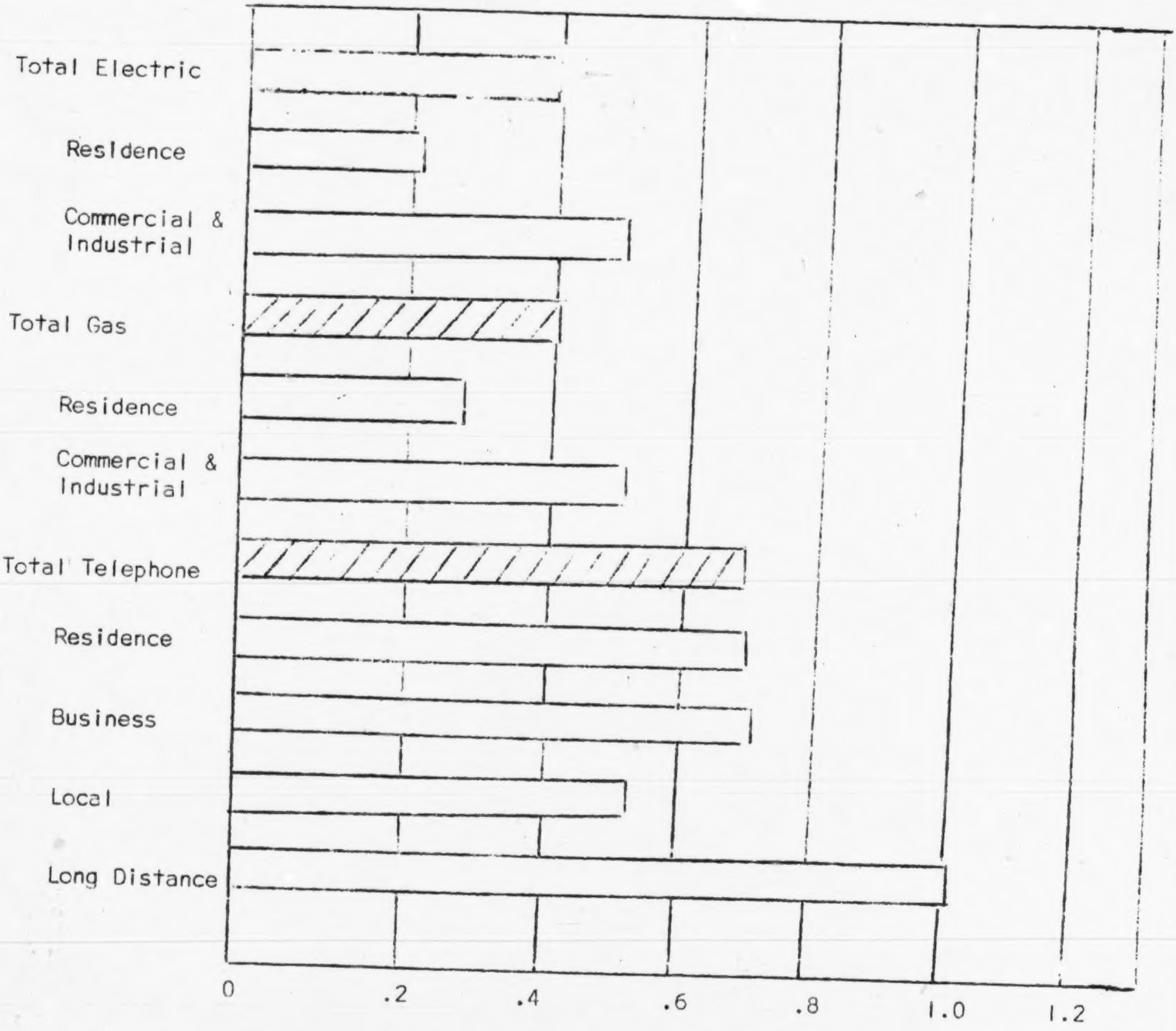
FIGURE 3

Income Sensitivity for Sales of the Nontransportation Utilities (1929-1960 Average, Growth Trend Removed)



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UNIT II

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ECON 12

Unit II Workbook
Spring, 1968 Edition

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ECON 12
Unit II Workbook

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LESSON I

Unit II
Ecercise I

ADAM SMITH'S INVISIBLE HAND: THE EFFECTS OF COMPETITION ON RESOURCE ALLOCATION

This is an exercise to test Adam Smith's claim that resources are allocated to satisfy consumer wants if competitive markets are permitted to operate free of government interference.

We will test this claim by studying the effects of changing tastes and production techniques on two competing markets--cotton textile manufacture and linen weaving at the end of the eighteenth century, when Adam Smith wrote The Wealth of Nations. This was the time of the industrial revolution in England when the use of power driven spindles and looms to produce cotton, a new product in that day, had begun to revolutionize people's tastes as well as the means of producing cloth. There were thousands of skilled weavers who produced linen in their homes on hand looms. On the other hand, hundreds of cotton textile factories were being built to produce cotton. There was a lot of competition within each industry, as well as between the two industries.

I. EFFECT OF CHANGING CONSUMER DEMAND

At first, when cotton became available, people were not used to using it. It might even have seemed to be an inferior good. But because it was much cheaper, tastes changed and demand for cotton increased at the expense of the demand for linen.

To determine the effect on resource allocation of the new cotton industry, trace the chain reactions of buyers and sellers in each market to this change in demand.

a. What is the immediate reaction of the two markets to the increase in demand for cotton and the decrease in the demand for linen? For each of the following variables, state whether they increase or decrease.

Variable	In the Cotton Industry	In the Linen Industry
PRICE	______________	______________
PROFIT AND/OR LOSSES	______________	______________
AMOUNT OF CLOTH SUPPLIED BY EACH BUSINESS OR WEAVER	______________	______________

b. What happens next in these two industries? How would producers react to these changes in profits?

c. What will be the long-run effect of this change in demand on resource allocation? Compared to the original value of each of the variables, what can you predict about the long-run changes?

Variable	In the Cotton Industry	In the Linen Industry
# OF FIRMS OR MASTER WEAVERS IN THE INDUSTRY	____________	____________
PRICE OF THE CLOTH	____________	____________
PROFIT RATE	____________	____________
AMOUNT OF INPUTS USED	____________	____________

2. EFFECT OF CHANGING SUPPLY CONDITIONS

Assume that a new, even more efficient power loom is invented for use in the cotton textile industry.

a. What immediate effect will introducing this machinery have on the cotton textile industry?

COST PER YARD OF COTTON PRODUCED ____________

PRICE OF COTTON ____________

OUTPUT PER DAY PER COMPANY ____________

AMOUNT OF COTTON SOLD ____________

b. What effect will these changes have on the linen industry?

PRICE ____________

QUANTITY SOLD PER WEEK IN THE MARKET ____________

PROFIT RATE ____________

c. Compared to the conditions existing before the new loom was introduced, and assuming no other conditions change, what is the long-run effect of the improved technology?

Variable	Cotton Industry	Linen Industry
NUMBER OF FIRMS	____________	____________
QUANTITY OF PRODUCT PRODUCED	____________	____________

3. EFFECT OF COMPETITION ON RESOURCE ALLOCATION

a. In these cases who ultimately determines what is produced?

b. What factors determine how goods and services will be produced?

c. To whom will the output be distributed?

d. What would be the effect on resource allocation and consumer choice of government protection of linen weavers by placing a tax on cotton?

e. What would be the effect on resource allocation of monopoly in the cotton industry?

(DRAFT COPY---FOR RESTRICTED USE ONLY)

UNIT II

DEFINING MARKET

FRAME 1

Market--what does that word mean to you?

Right away, most people think of a place where things are bought and sold, such as a supermarket or a produce market where truck farmers sell fruits and vegetables.

If you go to Europe, you'll still find cities and towns with a market square in which farmers, tradesmen, and merchants set up their stalls for business. A market in this sense is a place where suppliers come to sell and customers come to buy.

But "market" is another of those words that an economist has to define with care because he wants to measure certain things in connection with it. For his purposes, a market is definitely NOT a place.

Here's his definition of the word:

> a market is the total number of people who buy and sell a particular good or service in competition with each other.

Note that a market is a collection of people who do certain things.

Which of the following is a market as defined by an economist?

All people who...

(check one)

_____ A. Shop at supermarkets

_____ B. Compete in buying and selling a good or service

_____ C. Manufacture a particular good

_____ D. Sell a particular good or service

> B. All the people who compete in buying and selling a good or service.

[illegible]

A market involves people-buyers and sellers. And as they buy and sell, what are these people doing?

____

Answer: They are competing

FRAME 3

If you look at the advertisements in the daily paper, there's not much doubt that sellers compete.

For example, midweek, you'll find supermarkets competing; weekend you'll find department stores competing; almost any time you'll find auto dealers competing.

When dealers or stores are competing for more customers, what tends to happen to the price of the product?

(check one)

_____ (a) It drops

_____ (b) It rises

(a) When sellers compete, the price tends to fall.

FRAME 4

Supermarkets, department stores, auto dealers, and most other merchants who advertise regularly tend to compete by offering products at a "bargain" price (on the goods or services advertised, at any rate.)

There's no doubt that sellers compete.

But do buyers compete?

They certainly do.

Think about what happens when there is a shortage of some good that everybody wants. Suppose, for example, that there is suddenly a great shortage of gasoline.

(continued on the next page)

FRAME 4 (continued)

With a limited supply, how would competition between buyers affect the price of gasoline?

_____ (a) Higher Prices

_____ (b) Lower Prices

_____ (c) No Change

(a) The price would go up--in a hurry.

With gasoline hard to get, a boy might say, "There's this girl and I've got to take her to the show Saturday night. I'll pay 50 cents a gallon."

A commuter might say, "It's tough getting to the train station, so I have to drive to work. Give me the gas, and I'll pay 55 cents a gallon."

A farmer might say, "I use gas to drive my electric power generator. Without power, I can't run my milking machines, my pumps, and all the rest, and I'll be ruined within a week. I've got to have gas. I'll pay 60 cents a gallon."

FRAME 5

So, while seller competition brings price down, buyer competition, for the available goods, forces price up.

Buyers and sellers, busy competing and thereby affecting price, make up a market.

See if you can define market the way the economist does:

____

____

(in your own words)

A market is the total collection of competing buyers and competing sellers for a particular good or service.

FRAME 6

Because they are made up of people--competing buyers and competing sellers--markets tend to have geographic boundaries, even though they are no longer specific places.

Depending on the location of those who compete in buying and selling, we classify markets as national, regional, or local.

As an example of a national market, let's take New England lobsters. In these days of rapid transportation, you can buy them in restaurants all over the country. There are only a few competing sellers--and they are located in the East. But their market is national because buyers all over the country compete for the available supply.

A hundred years ago, the market for New England lobsters was:

_____ (a) National

_____ (b) Regional

(b) Regional

A hundred years ago, lobsters might have made it from New England to, say, New York (shipped by rail), but that's about as much of the country as the they'd have covered. The competing buyers and the competing sellers would all have bee within a limited geographic region.

FRAME 7

Are the following markets national, regional, or local?

(a) Dairies serving the northern half of a state.

____

(b) Shoe repair shops serving customers living within several blocks of their locations.

____

(c) California lumber companies cutting and sawing redwood which is sold all over the United States

____

(d) Laundromats.

____

(a) Regional

(b) Local

(c) National

(d) Local

FRAME 8

Economists, like other scientists, like to be precise with their definitions. For their purposes, it would be very nice if we could say that the geographic boundaries of a market include absolutely 100 per cent of the competing buyers and the competing sellers of a good or service. In real life, we have to settle for a little less than that. We say:

> Whether a market is national, regional, or local is determined by the size of the area that includes virtually all of the competing buyers and the competing sellers of a particular good or service.

In other words, the market boundaries describe an area which includes most of the competing buyers and most of the competing sellers.

If all the sellers of a particular product are in one small part of the country and all the buyers are in every state of the union, what kind of market would exist?

_____ (a) National

_____ (b) Regional

_____ (c) Regional or Local

_____ (d) Local

(a) National

The answer has to be "national" because the area in which the buyers are found is nation-wide--even though the competing sellers are in a single geographic area.

FRAME 9

Remember, the total number of both buyers and sellers in competition with each other make up a market.

(continued on the next page)

Whether a market is national, regional, or local, is determined by the area in which most of the competing buyers and competing sellers of the good or service are found.

Although practically all the people in the country consume bread, which geographic area generally best describes the fresh bread market?

_____ (a) National

_____ (b) Regional

_____ (c) Regional or Local

_____ (d) Local

(c) Regional or Local

The bread market is regional or local, depending on the distribution area of the bakery. Even the "chain" bakeries bake and distribute bread within a region.

FRAME 10

A baker in San Francisco competes only with bakers in the immediate area he serves. His customers, (the competing buyers) may take their business to a neighboring store if prices are right, but they certainly are not about to travel to Chicago for their bakery goods. Virtually all of the competing buyers and sellers are in the same local area.

The bread market cannot be a national market because neither the sellers nor the buyers compete on a nation-wide basis, even though consumers of bread are found throughout the country.

Similarly, although women throughout the country patronize beauty shops, the sale of beauty shop services represents a ______________________ market. (National, Regional, or Local)

Local

FRAME 11

To determine whether a market is national, regional, or local, you must ask:

Does the area include ________________ of

the ___________________ buyers and sellers

for the good or service?

most/competing

FRAME 12

To say it another way: A market must include virtually all of the buyers and sellers who compete and thereby affect the price.

Say you have an uncle who lives in California but who always goes to Detroit to buy his new car. Does this mean that the market for automobiles is national?

______ (a) Yes

______ (b) No

(b) No

The market for automobiles is local--dealers serve very limited areas, and just about everybody buys an automobile fairly close to home. The local market contains virtually all of the buyers and sellers of the good. The few persons who go all the way to Detroit to pick up a new car probably do not affect the market price at all.

FRAME 13

Now, consider these situations and see if you can decide whether the market we're discussing is (1) national, (2) regional or local, (3) definitely local.

(continued on the next page)

FRAME 13 (continued)

After each item, write in the market level that you think applies:

(a) Cement can be produced almost anywhere, and it is in demand almost everywhere. It is, however, expensive to transport. Therefore, the cement market is ________________________.

(b) Ball clubs all over the United States compete as buyers and sellers of major league baseball players. This market is ________________________.

(c) Vermont maple syrup is a lumberjack favorite in the northwest, too; its sales represent a market that is ________________________.

(a) Regional or local.

Because transportation costs are high, cement is sold in the area in which it is produced.

(b) National. (or even international)

Many clubs, spread all over the country, compete against each other to sign up players. Players all over the country compete for places on the major teams.

(c) National.

Vermont syrup is produced in a single state, but it is on sale in grocery stores across the nation.

FRAME 14

Again, what is the question you ask to determine whether a market is national, regional, or local?

Does the area include ________________________

____

(in your own words)

"Does the area include most (virtually all) of the competing buyers and sellers for the good or service?"

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UNIT II

Program # 2

CYBERNETIC SYSTEMS

Program Objectives:

Given examples of systems that are primarily non-economic, the student will distinguish between those which simply provide information and those which are cybernetic.

Name the characteristics of a cybernetic system (i.e., standard, process, measurement, and feedback loop). Synonyms are acceptable for all except "feedback".)

FRAME 1

The word cybernetics (sigh-ber-NET-icks) may be new to you. It comes from a Greek word meaning "helmsman" and it is the name of an emerging science which studies how organisms (especially people), devices, and even organizations use information to adjust their actions in order to attain a desired goal.

As you might expect, a cybernetic system is a system which contains the means to steer or guide itself to some specified goal.

A simple example of a cybernetic system is the familiar home-heating system controlled by a thermostat. The thermostat includes a device to measure the heat of the room. When the room temperature falls below a selected level, the thermostat turns on the heater. When the temperature is restored to the selected level, the thermostat again takes over and turns off the heater.

The desired goal in this example might be, "Maintain temperature at 72 degrees." The system includes not only the heater but ~~the~~ mechanism to measure the temperature and control the heater as necessary to maintain the desired temperature.

If your hand touches something hot, it jerks away.

Is this an example of a cybernetic system?

(check one)

_____(a) Yes

_____(b) No

(a) Yes

This human reflex action is an example of a cybernetic system in action. Your sense of touch flashed a message to your brain that the object being touched was hot, probably too hot to be handled ~~safely~~. The information was promptly channeled to muscles which jerked your hand back out of harm's way.

FRAME 2

A girl is making a skirt. She pins up the hem and then tries on the garment. She decides that the hem dips too low on one side, so she repins it.

Is this an example of a cybernetic system?
Give a reason for your answer.

(check one)

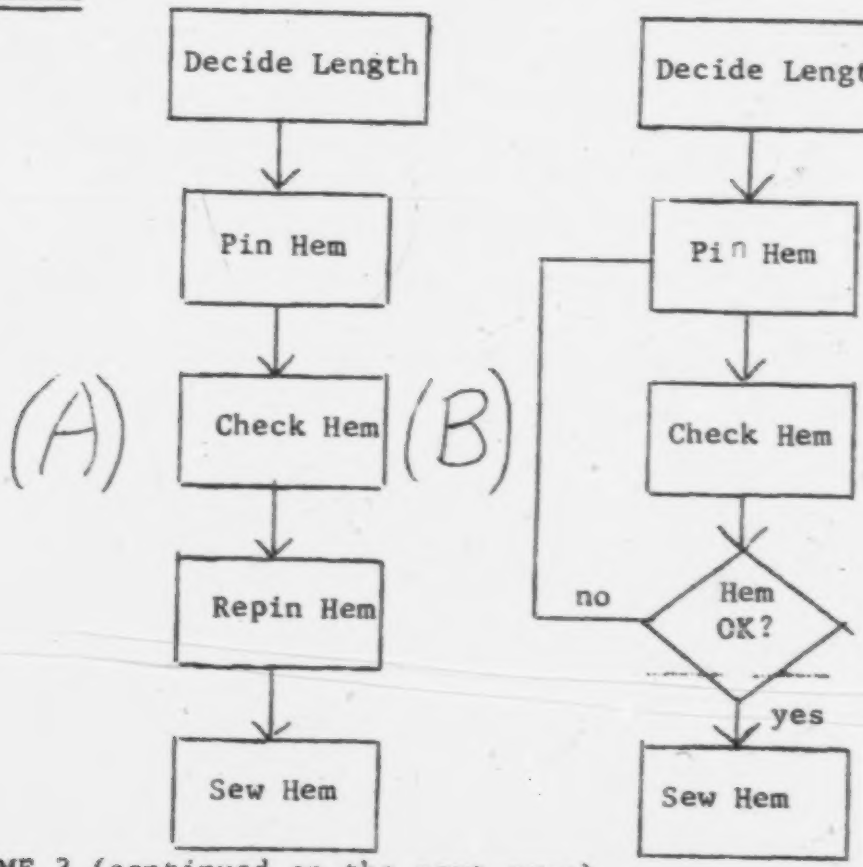
_____ (a) Yes

_____ (b) No

(a) Yes

This is a cybernetic system. The girl is using information to adjust her performance so that she can attain her goal. She pinned the hem, checked it, and, on the basis of what she saw, decided that it needed correcting.

FRAME 3



Decide Length
Pin Hem
(A)
Check Hem
Repin Hem
Sew Hem
(B)
Decide Length
Pin Hem
Check Hem
no
Hem OK?
yes
Sew Hem

One convenient way of describing a series of actions is to draw a flow chart of the kind that computer programers use.

FRAME 3 (continued on the next page)

FRAME 3 (continued)

Which diagram on the previous page correctly illustrates the process of adjusting the length of the hem as a cybernetic system?

(check one)

_____ (A)

_____ (B)

Diagram B shows a cybernetic systen

FRAME 4

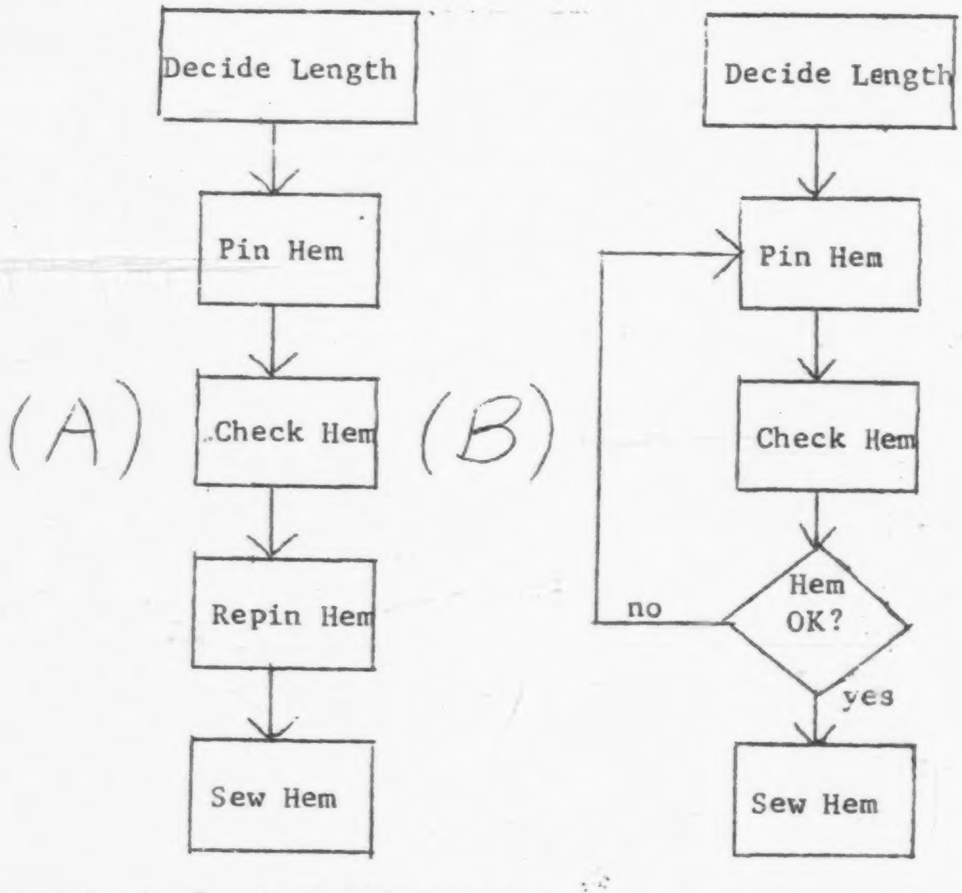


Diagram A simply shows the steps of adjusting the hem: . . Diagram B, on the other hand, presents the steps in the form of cybernetic system--a system which builds in a procedure for gathering information (about errors in the hem) and then using that information to attain the desired goal (a skirt of the desired length).

If this is not clear to you, consider what happens if, after repinning the hem, the girl finds that the skirt is now too short. When she checks again she is going to find that further adjustment is needed. Diagram A makes no allowance for this. It does not depict a cybernetic system.

As you look at the two diagrams, what is the chief difference between them?
(Space provided for answer on the next page)

FRAME 4 (continued)

WRITE YOUR ANSWER HERE: ______________________________

____

____

____

____

____

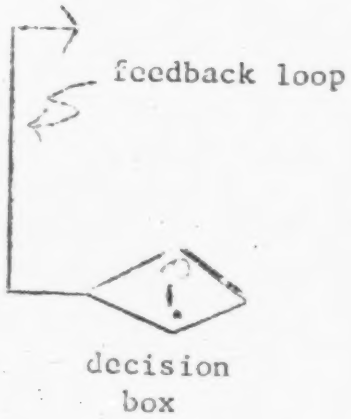
Diagram B includes the same steps as Diagram A, but Diagram B also shows a DECISION STEP (diamond-shaped). The DECISION STEP requires you make a judgment as to whether to proceed to the next step (sewing the hem) or to back up and try again.

FRAME 5

Diagram B in the last frame includes the diamond-shaped "decision box" plus an arrow depicting a "feedback loop."

It is feedback which distinguishes the cybernetic system from a simple description of a series of steps.

Without a feedback loop, you do not have a cybernetic system.



Is a car's gas gauge an example of a cybernetic system?

(check one)

_____ (a) Yes

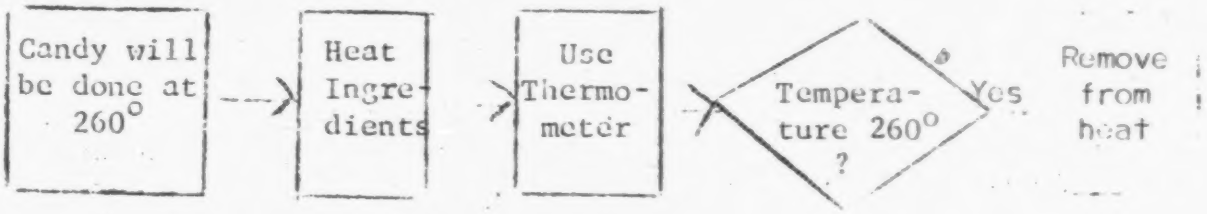
_____ (b) No

(b) No

The gas gauge provides information, but it does nothing with the information. There is no feedback from the gauge the fuel system. You can run out of gas and the most that the gauge will do is register "zero."

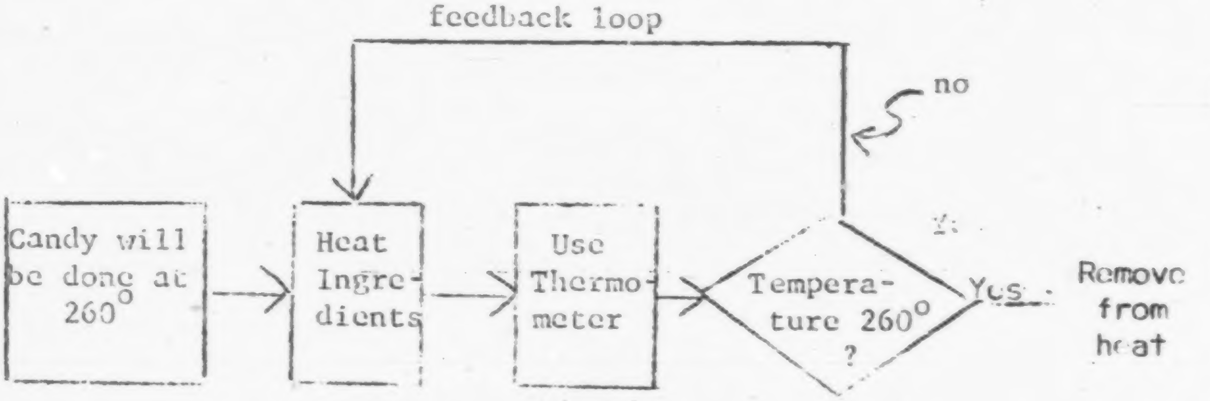
FRAME 6

Here is a diagram of a cybernetic system from which the feedback loop has been omitted. It shows, in simplified form, the process followed by a candy-maker.



Candy will be done at 260°
Heat Ingredients
Use Thermometer
Temperature 260° ?
Yes
Remove from heat

Draw and label the feedback loop.



feedback loop
no
Candy will be done at 260°
Heat Ingredients
Use Thermometer
Temperature 260° ?
Yes
Remove from heat

FRAME 7

Is a wrist watch an example of a cybernetic system?

(check one)

_____ (a) Yes

_____ (b) No

(b) No

A wrist watch simply provides information.

If something is to be done with the information, other elements must be added to the system--perhaps a person who will make a decision that something must be done at a certain time.

FRAME 8

A watch or clock are not examples of cybernetic systems. They provide information, but they do not react to the information.

Let's consider the flushing mechanism on an ordinary toilet cistern. When the tank is emptied, water flows back into it via a faucet. The faucet is controlled by a lever to which is attached a float. As the water level rises in the tank, so does the float and so does the position of the lever. Eventually, the float rises the lever to the point where the faucet is turned off. The water ceases to flow into the tank.

Is this flushing mechanism an example of a cybernetic system?

(check one)

_____ (a) Yes

_____ (b) No

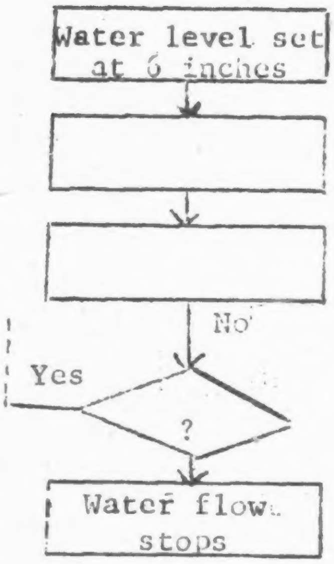
(a) Yes

The float "reads" the water level and so long as the level is less than desired, water continues to flow into the tank.

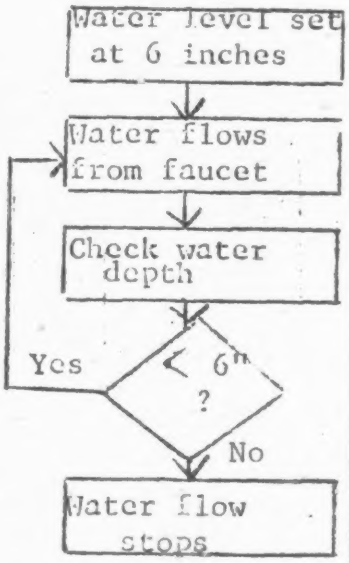
FRAME 9

Let's say that the plumber who installs the cistern sets the float so that the faucet will be closed when the water in the tank is six inches deep. He hooks everything up and turns on the water.

See if you can complete the unlabeled parts of the flow chart at right. In addition, complete the arrow showing the feedback loop


Water level set at 6 inches
No
Yes
?
Water flow stops

Your flow chart should look like the one shown here. Your own words are acceptable, provided the meanings are about the same as those given. The important part is the feedback loop, linking the decision box and the process. So long as the water is less than six inches, water continues to flow.


Water level set at 6 inches
Water flows from faucet
Check water depth
< 6"
?
Yes
No
Water flow stops

FRAME 10

The feedback loop--the "steering" or "error-correcting" portion--is an essential part of any cybernetic system. It has been present in each example we have considered.

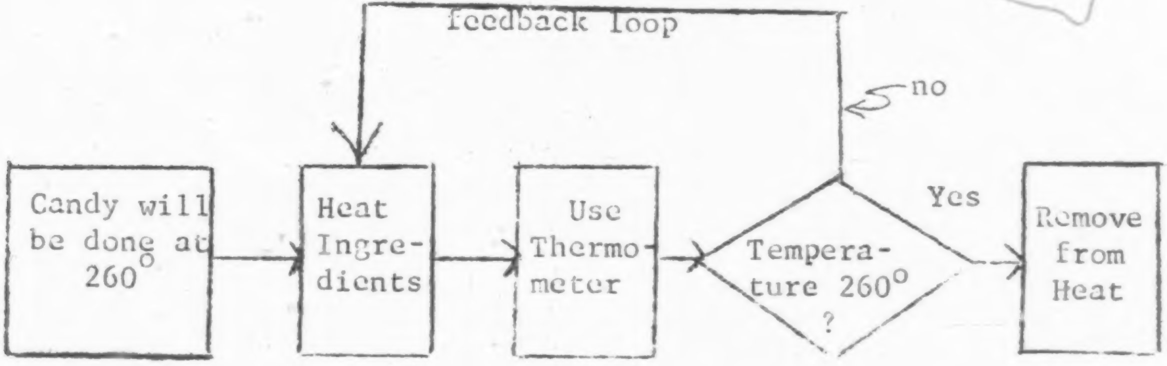
Three other elements have also been present in each example:

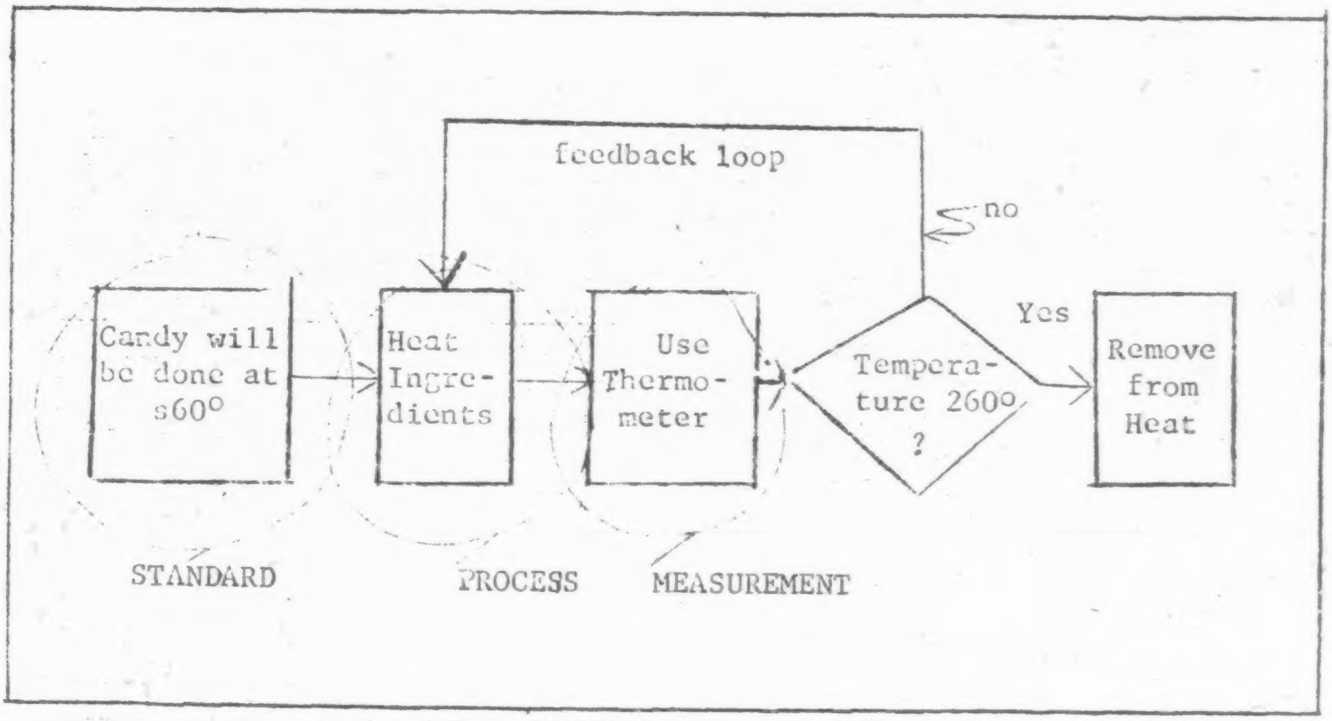
A STANDARD:	The goal to be attained by the cybernetic system, where the goal is stated so that it can be measured.
A PROCESS:	The means by which we expect to attain the goal.
MEASUREMENT:	The device or means by which we check our progress toward that goal.

FRAME 10 continued on the next page

FRAME 10 - Continued

Here, again, is the candy-making example. Circle and label: (1) The Standard; (2) The Process; (3) The Measurement.


feedback loop
no
Candy will be done at 260°
Heat Ingredients
Use Thermometer
Temperature 260° ?
Yes
Remove from Heat


feedback loop
no
Candy will be done at 260°
Heat Ingredients
Use Thermometer
Temperature 260° ?
Yes
Remove from Heat
STANDARD
PROCESS
MEASUREMENT

FRAME 11

True or false?

In a cybernetic system, we compare what exists (the result of what has happened during the Process) with what we want (the Standard). If they are not the same, we go back to the Process and make whatever further changes are needed.

_____(a) True

_____(b) False

(a) True

FRAME 12

True or false?

A Standard must be expressed in a form which allows us to detect whether it has been attained.

_____(a) True

_____(b) False

(a) True!

FRAME 13

Is the following acceptable as a Standard in a cybernetic system?

5 percent increase in gas mileage

_____(a) acceptable

_____(b) Not acceptable

Explain your answer: ____________________________________

____

(a) Acceptable. In a cybernetic system for getting increased mileage from gasoline used, the system tests to see if performance has improved by 5 percent. If it hasn't, appropriate action is taken.

FRAME 14

Is the following acceptable as a Standard in a cybernetic system created by a school board? Better schools

_____(a) Acceptable

_____(b) Not acceptable

FRAME 14 - (continued)

(b) Not acceptable.

FRAME 15

What's wrong with "better schools" as a Standard in a cybernetic system?

A Standard must be expressed in a form which allows us to detect whether it has been attained.

Without more information, who's to say when a school is "better" than it was? Will we accept that a school is better if new buildings are added? Is it better if, say, a course in economics is added to the curriculum? Is it better if higher grading standards are instituted?

"Better" is not specific enough. A Standard has to be measurable.

Is the following acceptable as a Standard in a cybernetic system?

Bigger portions for cafeteria meals.

_____(a) Acceptable

_____(b) Not acceptable

(b) Not acceptable--we hope you're not surprised it's much more specific than the last example. But still there's a question: How big is "bigger"? If a cybernetic system is set up to ensure that bigger helpings are served, will it be sufficient if an extra half-ounce of potatoes is put on each plate? You could certainly measure this. But lacking a more specific standard, who knows if this is acceptable?

FRAME 16

Summarize what has just been said by completing this sentence in your own words.

An acceptable Standard in a cybernetic system must

____

____

FRAME 16 - (continued)

Summarize what has just been said by completing this sentence in your own words.

An acceptable Standard in a cybernetic system must

____

____

In briefest form, a Standard must be measurable.

FRAME 17

The feedback loop permits us to use the most recent information available to adjust our actions so that we can achieve our goals. But before we make use of the feedback loop we must:

1. Specify what we hope to attain--
   set our ______________________.
2. Go through a ______________________.
3. Check our progress by means of
   ______________________________________.

1. Standard (goal)
2. Process
3. Measurement

FRAME 18

Name the four steps or elements of a cybernetic system.

____

____

____

____

FRAME 18 - (continued)

Standard, Process, Measurement, Feedback Loop.

FRAME 19

Is it possible to have a cybernetic system which does not include all four of the steps or elements?

_____(a) Yes

_____(b) No.

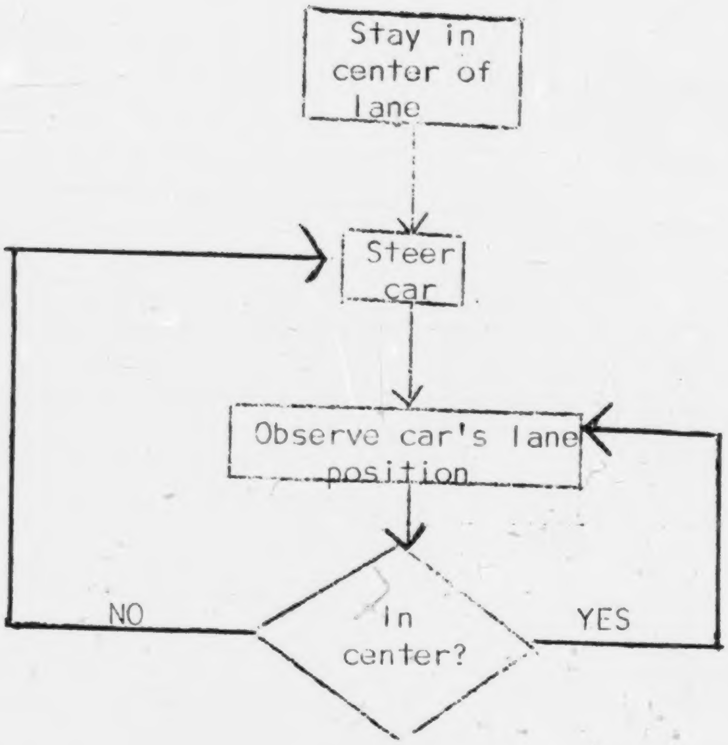
Explain____

____

(b) No.

A cybernetic system must, as a minimum, have all four of these elements before it can be "self-steering." It must include everything necessary for detecting what is happening and deciding whether the desired standard is being reached or maintained.

FRAME 20


Stay in center of lane
Steer car
Observe car's lane position
in center?
NO
YES

In the above flow chart:

(a) Which elements of a cybernetic system are present?

____

____

(b) Does this represent a cybernetic system?

Yes/No
(pick one)

(a) All four of the elements are present: (1) standard, (2) process, (3) measurement, (4) feedback loops.

(b) Yes, this is a cybernetic system.

Concluding Remarks

The last example was alittle more complicated than previous ones in that it had two feedback loops. In the view of some writers, it is more truly a cybernetic system since it shows a continuing action which is an essential part of the overall process. (In other words, if the feedback stops, the whole process of steering the car is apt to come to a sudden crunching halt.) Our earlier examples, by contrast, included the elements of a cybernetic system but the processes described might be termed intermittent; when the candy mixture reaches the desired temperature, for example, the process comes to an end and will not start up again until you decide to make candy again. On the other hand, the house thermostat is an example of a system that operates as long as the heater is turned on. The thermostat is an operating mechanical device which monitors itself constantly to control the furrace and room temperature.

We do not need to get caught up in the subtleties of these matters at this point.[1] Our purpose has been to introduce you to the thought that in a system of this type, the parts are interconnected to communicate and to control the overall process. As you will see shortly, our economy can be thought of as a giant cybernetic system and individual markets can be thought of as cybernetic systems as well. Just as a thermostat can be thought of as a cybernetic system to regulate room temperature, a market can be thought of as a cybernetic system to regulate the price and quantity produced of a good.

Please turn to the criterion test.

---

[1] If you wish to know more about cybernetics, try:

G. T. Guilbaud, What is Cybernetics? Criterion Books, New York, 1959.

Beer, Stafford, Cybernetics and Management.

CYBERNETIC SYSTEMS

UNIT II
Lesson No. 1

PROGRAM
CRITERION TEST

1. Of the following, which are cybernetic systems?

   (a) The timing mechanism on a clothes dryer which turns off the dryer at a specified time.
   (b) A course in which an F grade requires that you repeat the course.
   (c) Whittling a peg to fit a hole.
   (d) Turn signal light blinking at you on an approaching car.
   (e) Reading a book.
   (f) A basketball coach giving instructions to his team throughout a game.
   (g) Steering a car into a garage.
   (h) Turning the steering wheel of a car.
   (i) "Stop" sign at an intersection

2. Name the essential parts of a cybernetic system:

   1. ______________________________
   2. ______________________________
   3. ______________________________
   4. ______________________________

3. (BONUS QUESTION)

   For one of the cybernetic systems in question 1 above, draw a flow chart identifying the essential parts of the system:

UNIT II
Lesson No. 1

ANSWERS TO CRITERION TEST

1. (a), (b), (c), (f), (g)

2. 1. standard
   2. process
   3. measurement
   4. feedback

UNIT II LESSON 2

PROGRAM

MODELS

This program briefly reviews two major points covered in the motion picture and class discussion about models and then describes in greater detail a further way in which economists use models.

When you are through, you should be able to:

1. List three characteristics that all models have;
2. Recognize the kinds of assumptions made in constructing the idealized models used in economics;
3. Describe how an idealized model is used.

FRAME 1

Let's begin by picking up two points already discussed:

(1) The two purposes for which models are used.

(2) The six steps involved in making a simple model.

(check one)

__________(a) No problem. I remember them. Frame 2

__________(b) I'd like a fast review. Frame 4

FRAME 2

Fine. Here's a question:

What are the two purposes for which models are used?

(a) ____

(b) ____

Models are used to

(a) explain

(b) predict

(check one)

__________(a) If your answers were wrong or if you need some explanation Frame 4

__________(b) If you were correct Frame 3

FRAME 3

Here's another question:

What are the steps in making a simple model?

____

____

____

____

____

____

to Frame 5

FRAME 4

You need a review.

The movie was concerned with two uses of models. The examples of one usage included the football play diagram, the dress pattern, and the computer program for a space shot. All of these models said what would happen in a certain set of circumstances. They were used to __________ (what's the word?).

The models were all used to predict.

Another group of models included a street map and the circular flow diagram seen earlier in this course. These were used not so much to predict as to ___________ (what's the word?).

The second group of models was used to explain.

The map explained the relationship of one street to another, for instance. The circular flow diagram explained the relationship of workers and indistry.

Since some models serve both purposes, we can say that models are used to explain and/or predict.

to Frame 3

FRAME 5

These are the steps. Check your answer:

(1) Select observations from the real world

(2) Construct model

(3) Test to see if model explains/predicts accurately

(4) Revise model as necessary

(5) Test again

(6) Repeat steps (4) and (5) until model explains/predicts accurately

Your own words are acceptable, but your list should contain all the steps and have them in the correct order.

________(a) If your answer did not meet these standards	Frame 6
________(b) If your answer was satisfactory	Frame 7

FRAME 6

One way to recall the stages in making a model is to think through the stages of making the dress pattern. The test of whether the pattern was a good model was its ability to predict that a dress would fit if cut according to the pattern.

In making the pattern, the girl used a "cut and fit" method. She made the pattern and then tried it against her. When the pattern seemed right, she used it to make a dress. The dress didn't fit (the pattern had not predicted accurately), so she changed the pattern and tried again. This time the dress did fit. These were the stages:

(1) Select observations from real world	Take measurements
(2) Construct model	First attempt at pattern
(3) Test to see if model predicts accurately	Try pattern for size

(continued)

FRAME 6 (continued)

(4) Revise model	Fix pattern; make dress
(5) Test again	Try on dress
(6) Repeat (4) and (5) as necessary	Dress doesn't fit; so amend pattern, cut material for amended pattern
	Try on new dress
	It fits. Pattern predicts accurately.

When you are sure you can list the steps from memory Frame 7

FRAME 7

We have already said what the uses of a model are. Using that information, indicate with a check mark which of the following are models?

__________(a) A well-behaved child

__________(b) A street map

__________(c) A girl who displays new clothes

__________(d) The equation $E = MC^2$

__________(e) A traffic light

__________(f) A new home at the entrance to a housing tract

For the correct answer, go to Frame 8

FRAME 8

The uses of a model to which we referred are that it explains and/or predicts.

With that as a yardstick, the following are models:

(b) A street map

(d) The equation $E = MC^2$

None of the others listed is a model, at least not in the way we have been using the word.

(check one)

__________(a) If you want to see why the other answers were wrong — Frame 9

__________(b) If you are ready to go ahead — Frame 10

Frame 9

The remaining four examples were not models in the sense in which we have been using the word. That is, none of them is used to explain and/or predict.

It's true, however, that three of them are often called models in another sense -- they are examples or samples of a particular species. However, that is not what we are looking for here.

As we have discussed it so far, the test of a model is whether it explains and/or predicts.

to Frame 10

FRAME 10

We have noted that one characteristic of a model is that it explains and/or predicts. Or, to put it another way, one of the tests of whether something is a model is to ask, "Does it explain and/or predict?" This describes what a model does; it explains and/or predicts. But what is the relation between a model and the thing the model explains and/or predicts?

Models have two more important characteristics. Perhaps you have remembered them from the movie?

Following are some of the models which were shown in the movie. In what ways are they similar?

- Diagram of a football play

- Dress pattern

- Street map

- Circular flow diagram

- Mathematical formula

(check one)

__________(a) Give me a hint to get started Frame 11

__________(b) I think I've got it Frame 13

Frame 11

You need a hint. So here are a couple of questions to ask yourself:

(1) Do any of the models listed look like the thing they represent?

(2) Do any of the models tell you anything about the position, shape, or role of one part with respect to another?

(check one)

__________(a) I'm still stumped Frame 12

__________(b) I think I've got it Frame 13

Frame 12

You're smart to admit it if you're stuck.

Perhaps you recall that in the movie we made quite a point of the fact that in constructing a model we make a selection of observations from the real world. We do not take all the information available. Instead, we use only as much as we need to show how one part fits with another.

The word we used to describe the simplication that comes from using only selected observations was abstraction, a word meaning "to draw from" or "separate".

The amount of information used was sufficient to show relationships -- the position and role of each player in the football diagram, the relationship of worker and industry in the circular flow diagram, and so on.

So these are the qualities we hoped you would find in the examples of models:

- They are all abstractions

- They all show relationships

Please go ahead to Frame 13

FRAME 13

All the models have these things in common:

- They are abstractions (that is, they are simplifications of the real thing; they are unlike the real-life objects or concepts they portray).
- They show relationships. (The football diagram, for instance, shows where the players must be in relation to each other if the play is to succeed; the dress pattern shows the relationship between the measurements).

So now we have three characteristics of a model:

(1) It explains and/or predicts

(2) It is an abstraction

(3) It shows relationships

Try to remember these three characteristics. They sum up all we have said so far about models. When we test whether some object or idea is a model, it has to meet all three of these standards.

Go to Frame 14

FRAME 14

Without looking at the last frame, write down the three characteristics a model must possess.

(a)____

(b)____

(c)____

The three characteristics of a model are:

(a) It explains and/or predicts

(b) It is an abstraction

(c) It shows relationships

FRAME 15

The models considered so far in this course have been fairly simple. The want-satisfaction chain and the circular flow model used in Unit I explain important economic relationships in diagram form. Their main purpose is instructional; they visualize the relationship between important concepts to help you remember them. The cybernetic system diagrams you worked with in the last lesson are also models. They describe how a system performs its function and show the feedback mechanism in the system which permits it to correct itself automatically.

In this Unit we introduce a new way of using models in economics, a way that combines the uses of the simple "explain" and "predict" models for a new purpose. The models we will develop will enable us to compare an ideal situation (the way the model works) with conditions as they exist in the real world.

We call these models idealized models, and we will construct and study idealized models of two different kinds of markets: perfectly competitive markets and perfect monopoly markets. The adjective "idealized" is used to describe perfect competition and perfect monopoly to emphasize that the markets described by the models are not real. One definition of idealized you will find in the dictionary is, "capable of existing as a mental concept only, imaginary." Perfect competition and perfect monopoly are ideal because they are imaginary and have exact characteristics which are stated by the model builder.

An idealized model, like other models, is an abstraction -- a simplification of reality. The perfect competition and perfect monopoly models you will study are simplified by making assumptions about the competitive conditions that exist in the market and about the way in which buyers and sellers make decisions. We assume that:

- "Perfect" or "ideal" conditions exist -- that everything works just the way we have stated, with no exceptions, whether or not these conditions could exist in real life.

FRAME 15 (continued)

- All decisions are made by a "model man" who, given alternatives, will always make the choice that brings him maximum economic benefit. He is completely rational.

We can take an example of "pure conditions" from the model you will study next, the model of a perfectly competitive market. In it, we assume that (i) there are many producers of a commodity; (ii) all produce an identical commodity; (iii) there is complete "freedom of entry" into this business -- it costs nothing to start and there are no obstacles to starting up.

Do these three conditions describe conditions in the real world?

__________(a) Yes

__________(b) No

If your answer is "yes," can you think of an example?

(c)____

(b) The three assumptions, taken together, do not fit the real world. The real world is rarely that tidy. An industry such as wheat farming fits the first two assumptions. But the third condition (freedom of entry) assumes too much for reality; it takes money and know-how to become a successful wheat farmer.

FRAME 16

Why set up these "perfect conditions" of the idealized model if they do not fit the real world?

The economist uses perfect conditions much as a physicist conducts experiments in a vacuum, to study how a thing operates under controlled conditions. This permits him to remove from an investigation some of the factors that might effect the outcome.

Once we set up a model of perfect competition we can study how the market operates under these perfect conditions. That is, we can explain or predict how buyers and sellers will compete under the perfect conditions set up in the model. We can predict what effect this competition will have on how resources are allocated to satisfy wants. The two idealized markets permit us to study the effect of competition between buyers and sellers in the two extreme sets of conditions: complete, perfect competition between thousands of buyers and sellers; complete, perfect monopoly where there is only one seller and thousands of buyers.

Having studied the way the model markets operate, we can hope to learn more about how things happen in the real world by comparing actual competition with the predictions of the model:

- We may be able to see how the real world falls short of the controlled or "ideal" world of the model.

- We may be able to eliminate events which do not truly affect economic outcomes. (For example, we might say, "It cannot be this group of things which caused this event to happen because my model, which does not include them, also predicted the event.")

- We may be able to identify factors which could be changed to affect the real world in some desirable way. (We might say, "When I do thus-and-such to the model, it causes these events to happen. Perhaps the same thing would happen in real life.")

* * * * *

Let's pause a moment and have you decide what words are missing in this paragraph:

When an economist wants to compare an ideal situation with the real world, he prepares an ____________________ model. Then, in an effort to identify important relationships in the real world, he ____________________ the model's predictions with real events.

When an economist wants to compare an ideal situation with the real world, he prepares an idealized model. Then, in an effort to identify important relationships in the real world, he compares the model's predictions with real events.

FRAME 17

The second assumption made in an idealized model is:

- All decisions are made by a "model man" who is perfectly rational; given alternatives, will always make the choice that brings him maximum economic benefit.

Question: Let's say that in an economic model we are told simply that a businessman can step up productivity by beating his workers. Will he beat them?

__________ (a) Yes

__________ (b) No

(a) Yes, he will beat them. No doubt about it. We must assume that the model man will always make the choice that brings his maximum economic benefit. Lacking information on the longterm effects of this policy, you have to assume that he will step up production by beating his workers.

Just as the model market is not a real market, the model man is not a real person. You might not want him for a friend, but he is consistent. His decision is the logical one for the rules under which he operates.

FRAME 18

Why does the economist use a model "economic" man in market models? One basic reason is that using an idealized person who is perfectly logical and completely committed to economic gain permits us to predict his behavior in any situation.

So, we assume that the buyers and sellers in the model markets are perfectly rational and only interested in getting the greatest possible economic gain. What good does it do to predict the behavior of someone who isn't real? There are two reasons:

1. We want to find out how close consumers' and businessmen's and workers' decisions and actions are to that of the model man.
2. We are interested in figuring out what completely rational decisions would be in case real people want to make rational decisions themselves. Then we can advise businessmen what decisions to make in order to make the most profit. When you are deciding on a job or what to buy you can figure out the decision which will give you the greatest satisfaction.

to Frame 19

FRAME 19

You may wonder why an economist uses models and how it helps him to base his model on an unreal, idealized world.

The reason for using models is simply that, unlike many other kinds of scientist, an economist cannot conduct experiments in many of the matters that interest him.

So instead he uses a model. He uses an idealized model because he has set up the rules or conditions about how the market operates. This helps him to see what happens when events are uncluttered by the complexities of the real world. The purely logical idealized model helps him to understand the real world, and it may show him how the real world should operate to achieve certain goals.

to Frame 20

FRAME 20

Let's review a few key points.

Models are used to explain and/or predict. How else does an economist use models? (Write your answer).

to Frame 21

An economist also uses models to compare an idealized model with the real world. He does this to try to learn how closely the model predictions are to behavior in the real market.

Your answer can be in your own words, but it should at least contain the words underscored or others that mean the same thing.

If you did not get it right, you'd be smart to review from	Frame 15
If your answer was satisfactory	Frame 21

FRAME 21 (Review)

Of the following statements, which, if any, are acceptable assumptions on which to base an idealized model?

__________(a) All business decisions are approved by government.

__________(b) Government has no control over business.

__________(c) Either of the above.

__________(d) Neither of the above.

(c) Either are acceptable assumptions on which to base an idealized model. You can make up any conditions you want.

This is not to say that either assumption is necessarily true or reasonable. It merely means that in order to study some aspect of economics we might say, "We will start by supposing that..."

to Frame 22

FRAME 22 (Review)

Here's another example to consider:

A worker has a choice of two jobs. One is in the town in which he lives, the other involves a move to a distant city. He would be better off financially if he moved. His wife is urging him to stay put, however. She wants to be near her ailing, aged mother, and she wants their son, now in his senior year, to graduate from the high school he has attended for 3½ years.

In an idealized model, is there any doubt about which job the worker will take?

__________(a) Yes Frame 23

__________(b) No Frame 24

FRAME 23

You think there is some doubt about which job the worker will take?

It looks as if we have not made something clear.

In real life, there might well be some doubt about what the worker would do. He would balance the appeal of the job against the wishes of his family. Probably he would consider many more things than are presented in the problem -- the cost of moving, the prospects of the two jobs, and so on -- before reaching his personal decision.

But in an idealized model, most of this doesn't count. We assume that given a choice, he will pick the alternative that promises the greater economic benefit. Since the desire of his wife and son are given no economic value in the problem, they do not affect his decision. The economic man will go where the most money is.

Please return to Frame 22

FRAME 24

You say that in an idealized model there is no doubt about which job the worker will take?

In that case, which one will he pick?

__________(a) The lower-paid job in his present town — Frame 25

__________(b) The higher paid job in the distant city — Frame 26

FRAME 25

You say that he will take the lower-paid job in his present town.

Perhaps you feel that the wishes of his family are more important than financial gain?

In real life, you might be right. But real-life decisions like this are never simple. Even if you had a lot more information, you might not be able to be sure of your prediction. (In fact, the more information you had, the more uncertain you would probably be!)

But in an idealized model -- and that's what we are considering -- your answer is wrong. The rules of the game say that we can be quite sure that people will always make the choice that offers the greatest economic benefit. In this problem, the job which promises the greatest economic benefit is simply the one that pays more. All we are told is that the out-of-town job will leave the worker better off. But that is enough. The feelings of his family have nothing to do with the issue.

Please return to Frame 23

FRAME 26

You're right.

In an idealized model, the worker's decision is simple. He seeks the maximum economic benefit. The out-of-town job pays more. That's the one with maximum economic benefit. That's the one he will pick.

In real life, a man might find this a very difficult decision to make. In an idealized model, as we said earlier, the choice is uncluttered by the complexities we have to face in real life. The decision is made simply on the basis of economic benefit.

(DRAFT COPY---FOR RESTRICTED USE ONLY)

UNIT II

Lesson 3

Program 4
LINE GRAPHS

The purpose of this program is to train you to use line graphs. You will learn four things:

(1) What line graphs are and why they are useful,

(2) how to read a line graph and how to describe it;

(3) how to compare two graphs,

(4) when it is permissible to compare graphs.

FRAME 1

In discussing Efficiency, we had a number of tables in which we showed how Output varied with changes in Input. The tables showed a relationship between output produced and input used in production.

The changing values of related variables (as we call any measurable thing whose measurement can vary in amount) can also be shown by "drawing a picture" in the form of a line graph.

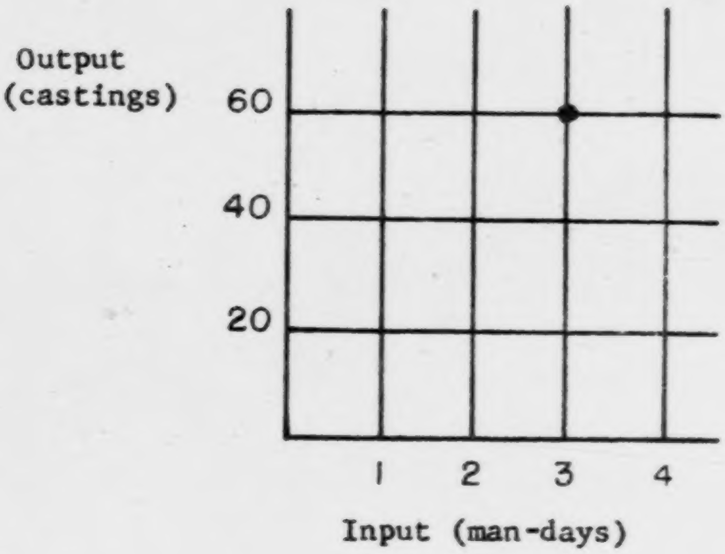
Like other kinds of pictures, a graph can sometimes be worth a thousand words. At a glance, a graph can show us relationships between variables which otherwise may take many numbers and a lot of interpretation to discover.

Before you can take advantage of graphs, you have to know a few special terms and ideas. Most of these terms and ideas are probably not new to you, but we want you to review them so that you can use them correctly.

Please go to FRAME 2

FRAME 2

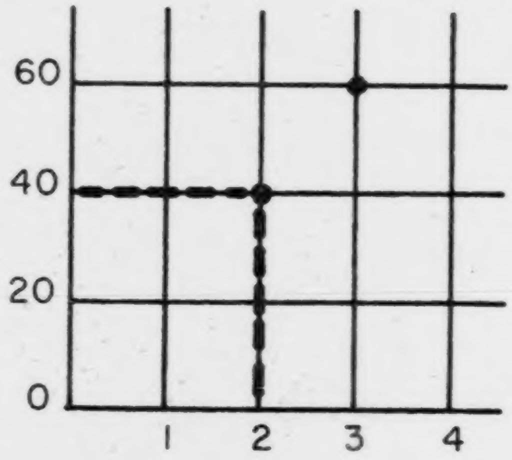
Company A	
input (man-days)	output (castings)
1	20
2	40
3	60
4	80



Above, is a table of the kind you have seen before and a graph on which we can depict the same information about the variables.

The variables here are called Input and Output. We have indicated by a single dot the values of one pair of variables, Input = 3 man-days and Output = 60 castings.

On the same graph, place a dot for the pair of variables, Input = 2 man-days and Output = 40 castings.



(a) If you feel that you understand, go ahead to FRAME 5.
(b) If you do not understand this answer, do the next frame.

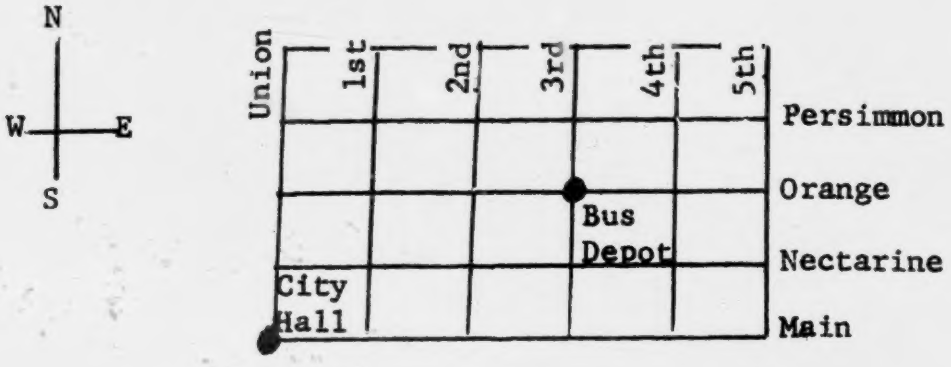
FRAME 3

You feel that we did not explain enough. Very well, let's try it from a different direction.

FRAME continued on the next page

FRAME 3 (continued)

Imagine that you're in the town of Treesville, standing outside City Hall (see map below). You want to get to the bus depot at the intersection of Orange and Third Streets. Since you've never been in Treesville before, you check your map:


N
W
E
S
Union
1st
2nd
3rd
4th
5th
Persimmon
Orange
Bus Depot
Nectarine
City Hall
Main

There are several ways of reaching the bus depot, but the simplest and most interesting would probably be to walk three blocks east on Main Street and then two blocks north to get to Orange.

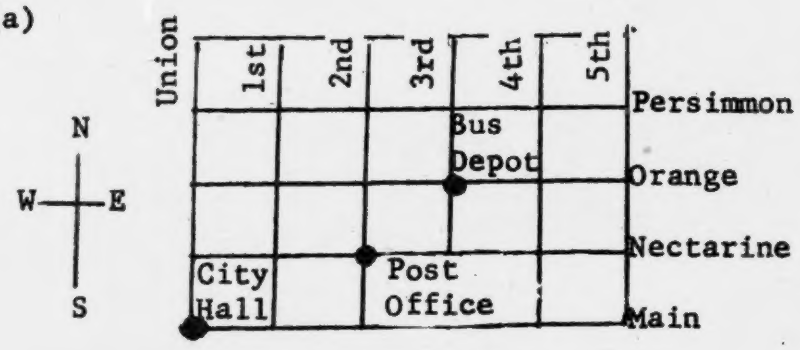
You want to go to the Post Office on the way to the bus depot. The Post Office, says a passing resident, is on the corner of Nectarine and Second.

(a) On the map, put a dot to indicate the location of the Post Office.

(b) You could get to the Post Office by going along Main for _____ (how Many?) blocks, and then

(c) along _____ (what street?) for _____ (how many?) blocks.

(a)


Union
1st
2nd
3rd
4th
5th
N
W
E
S
Persimmon
Bus Depot
Orange
Nectarine
City Hall
Post Office
Main

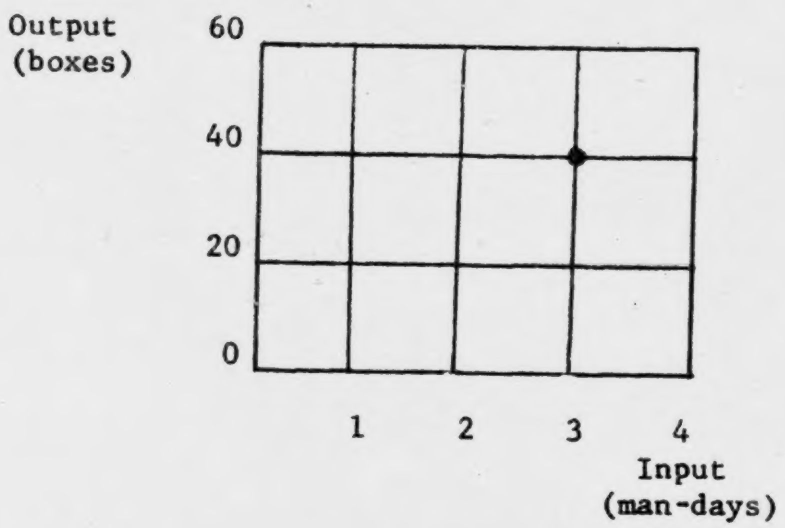
(b) Two
(c) Second, one.

FRAME 4

On the map of Treesville, we were able to see that by moving three blocks east (horizontally) and two blocks north (vertically), we would come to an intersection at which the bus depot was located.

We can do the same thing with a graph.

Company X	
Input (man-days)	Output (boxes)
1	10
2	25
3	40
4	55



Starting at zero (lower left corner), if we move three units of Input to the right, and then move upwards two divisions to the line representing 40 boxes on the Output scale, we come to a point which is the intersection of "3 input" and "40 output".

The one point represents both values.

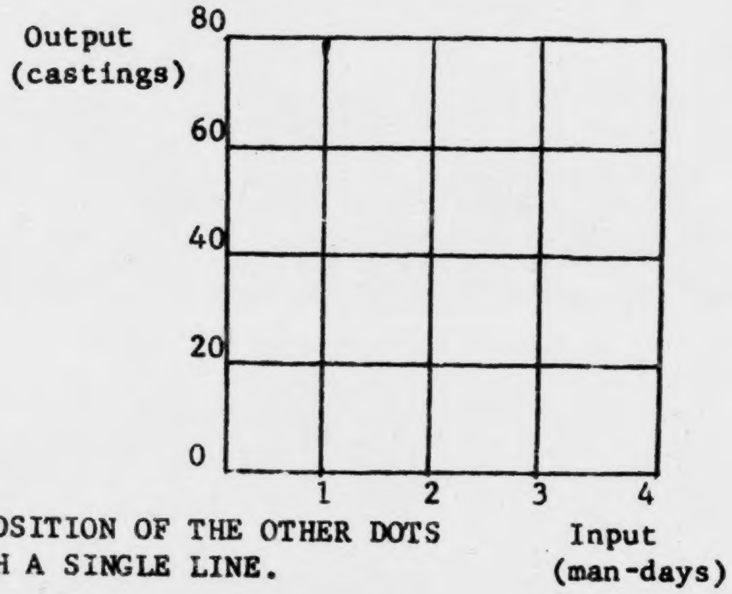
If we put a dot anywhere else on this graph, does it also represent two values?

Yes.

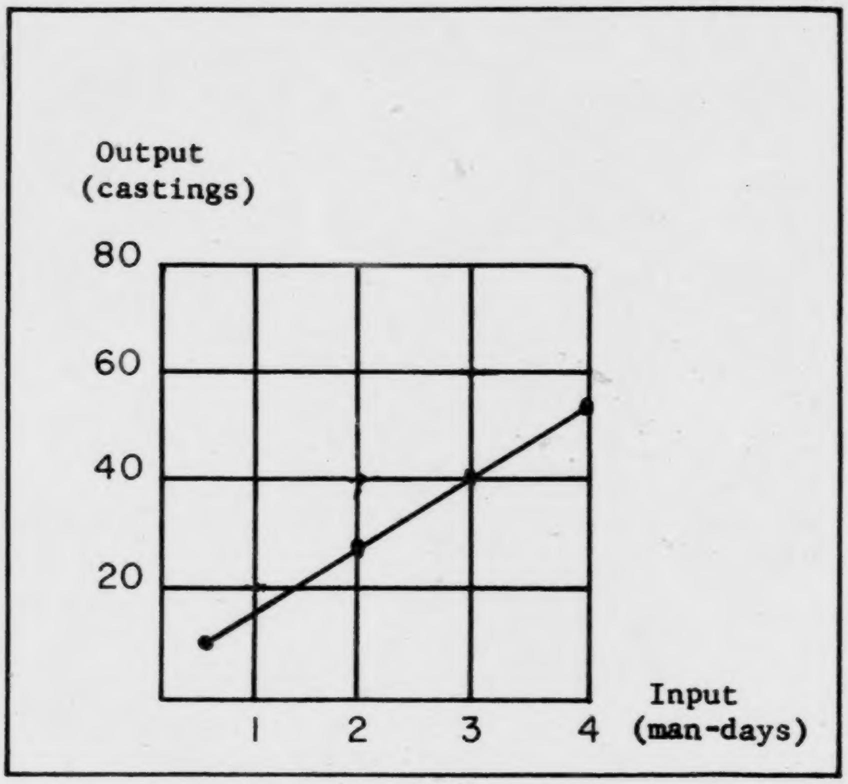
From any point on this graph, we can read downwards to get a value on the horizontal (Input) scale, and we can read sideways for a value on the vertical (Output) scale.

FRAME 5

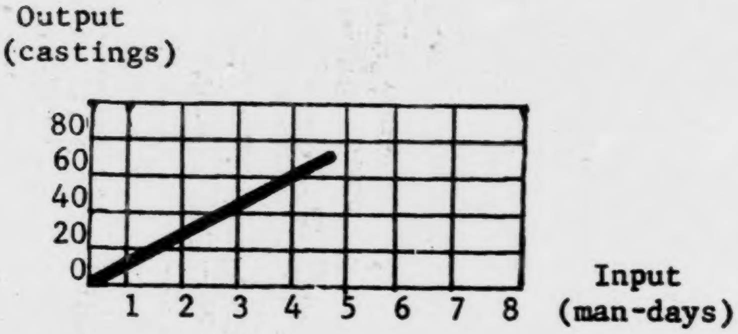
Company X	
Input (man-days)	Output (castings)
1	10
2	25
3	40
4	55



COMPLETE THE GRAPH BY PLOTTING THE POSITION OF THE OTHER DOTS AND THEN JOINING ALL OF THE DOTS WITH A SINGLE LINE.



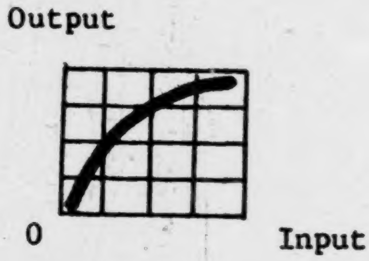
FRAME 6



In this graph, the points are joined by a straight line which rises from bottom left to upper right.

One of the characteristics we can describe for this line is it's slope. (Slope means here the same as it does when you are walking up a mountain side--the steepness of the rise or fall.)

The line connecting points on a graph is called a curve, even when it is a straight line, as in the graph above. A straight line is simply a curve with constant slope.



Which statement is true of this curve?

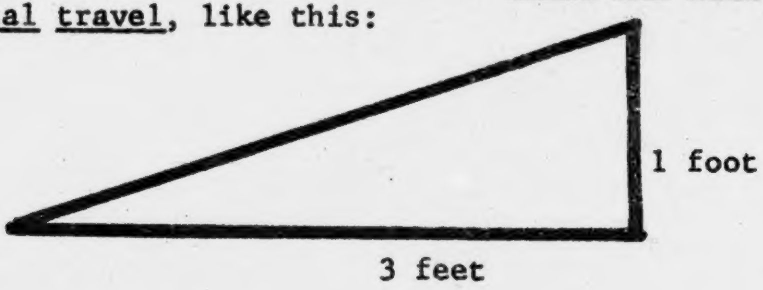
(a) The slope is constant.
(b) The slope is continually changing.

(b) The slope is continually changing.

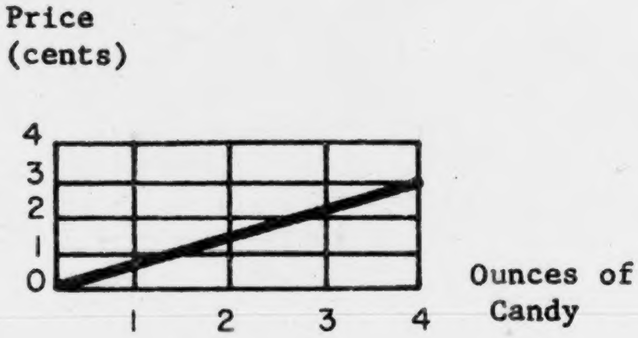
At bottom left, the slope is very steep. As we move to the right, the curve becomes almost horizontal.

FRAME 7

In describing the slope or gradient of a road or hill, an engineer always compares the amount of vertical change with the distance run. For example, he might say, "That hill has a one in three gradient," and he might write it 1/3 or 1:3. He means that the hill rises one foot for each three feet of horizontal travel, like this:



We do the same thing in describing the slope of a curve; we divide the vertical change by the horizontal change.



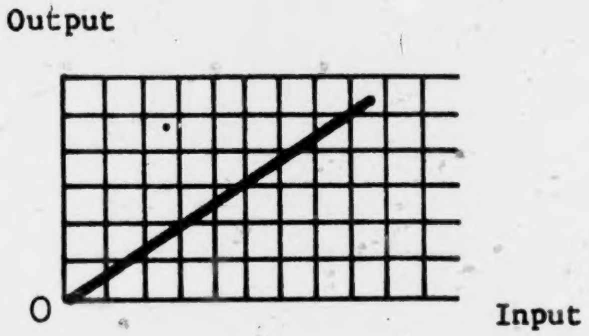
This shows a slope of

(a) 3/4
(b) 4/3

(a) 3/4

(Three units of vertical change for each four units of horizontal change.)

FRAME 8



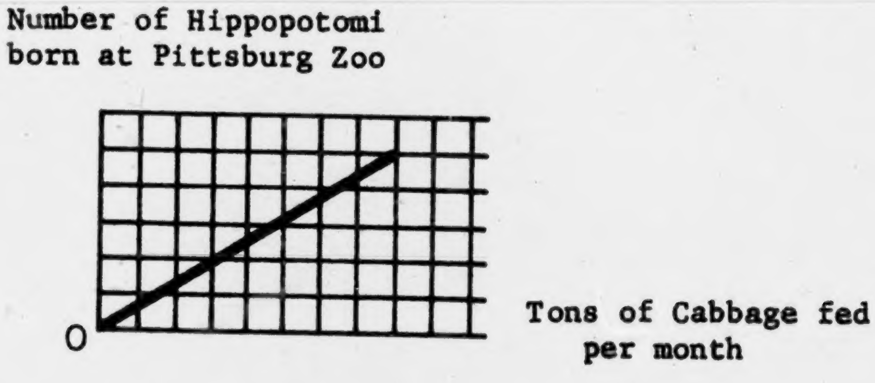
We have just defined slope as "the change in the vertical scale divided by the change in the horizontal scale."

$$\text{Slope} = \frac{\text{Vertical change}}{\text{Horizontal change}}$$

In the graph above, we calculate slope by dividing the change in input/output by the change in
(select one)
input/output.
(select one)

$$\boxed{\text{Slope} = \frac{\text{Change in OUTPUT}}{\text{Change in INPUT}}}$$

FRAME 9



In this graph,

$$\text{Slope} = \frac{\text{Change in ?}}{\text{Change in ?}}$$

$$\boxed{\text{Slope} = \frac{\text{Change in NUMBER OF HIPPOPOTAMI}}{\text{Change in TONS OF CABBAGE FED}}}$$

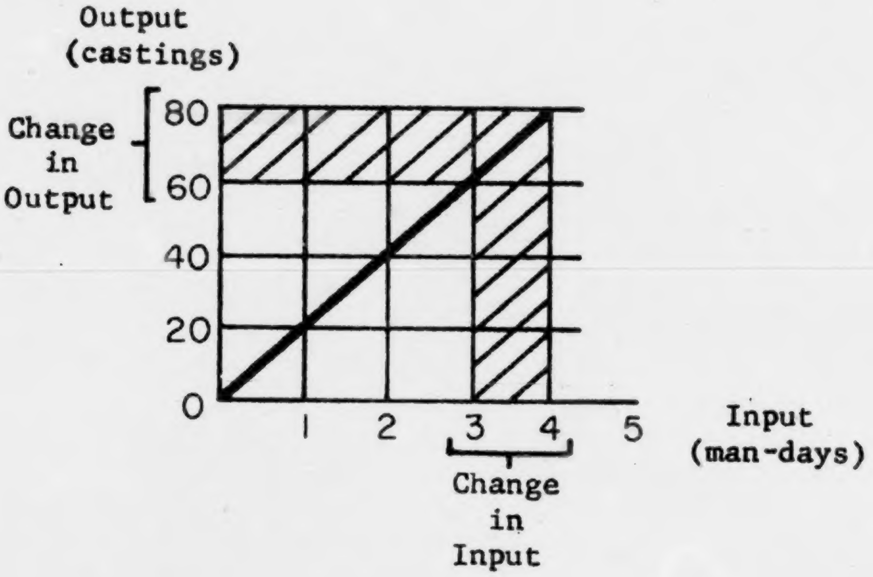
FRAME 10

It doesn't matter what the variables are in a graph -- Input-Output, Demand-Price, Cabbage-Hippos, X-Y, or anything else --the formula for slope compares the same two things:

$$\text{Slope} = \frac{?\ \text{Change}}{?\ \text{Change}}$$

$$\boxed{\text{Slope} = \frac{\text{VERTICAL Change}}{\text{HORIZONTAL Change}}}$$

FRAME 11



Here's a graph which shows that when Input is increased from 3 man-days to 4 man-days, Output goes up from 60 to 80 castings.

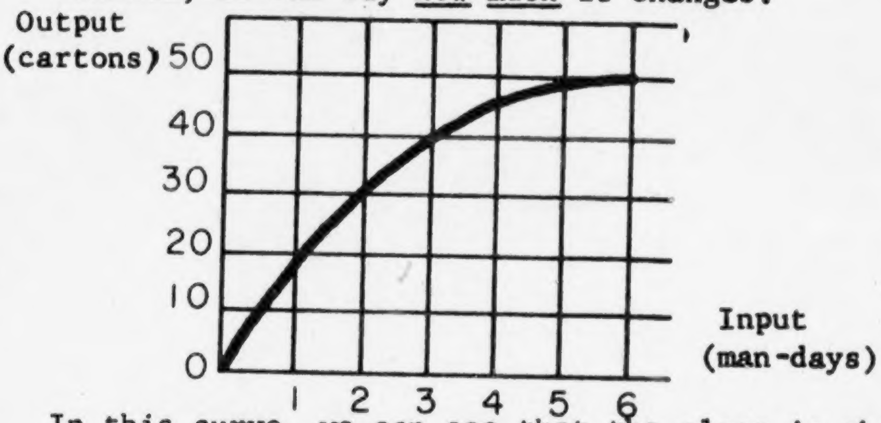
What is the slope of the curve?

Slope = ____________________

$$\text{Slope} = \frac{\text{Vertical change}}{\text{Horizontal change}} = \frac{\text{20 castings}}{\text{1 man-day}} = 20$$

FRAME 12

As you have seen, we may be able to tell, simply by looking at a curve, that the slope is greater at one point than another. Using the slope formula, we can say how much it changes.



Input (man-days)	Output (cartons)
1	20
2	30
3	40
4	46
5	49
6	50

In this curve, we can see that the slope is shallower at high amounts of Inputs than at low amounts.

Calculate the slope for

(a) an increase in Input from 1 man-day to 2 man-days.
(b) an increase in Input from 4 man-days to 5 man-days.

$$\text{Slope} = \frac{\text{Vertical change}}{\text{Horizontal change}}$$

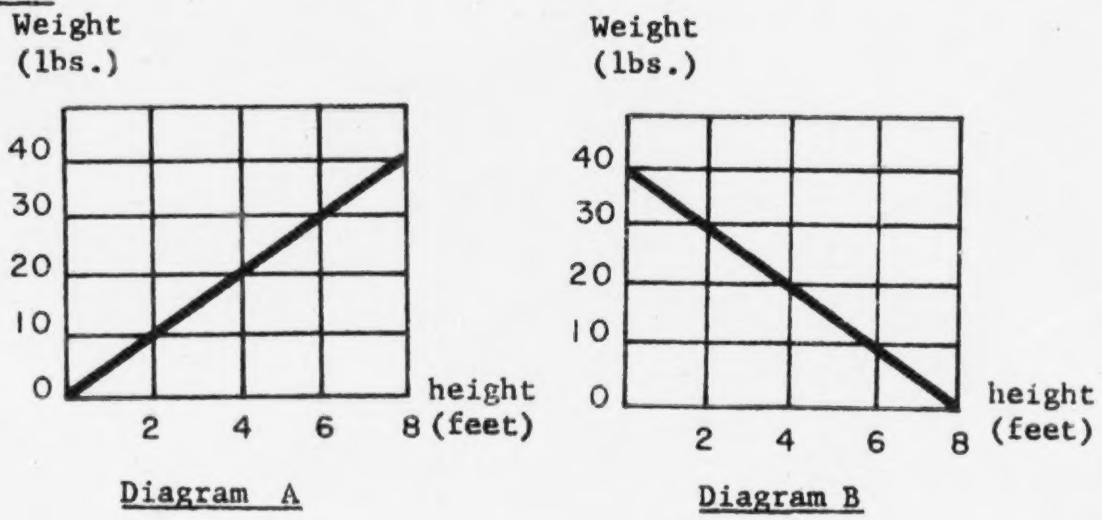
(a) When Input rises from 1 man-day to 2 man-days, Output rises from 20 cartons to 30 cartson.

$$\text{Slope} = \frac{\text{Change in Output}}{\text{Change in Input}} = \frac{10}{1} = 10$$

(b) When Input rises from 4 man-days to 5 man-days, Output rises from 46 cartons to 49 cartons.

$$\text{Slope} = \frac{\text{change in Output}}{\text{change in Input}} = \frac{3}{1} = 3$$

FRAME 13



Above are two straight-line curves. If you examine them, you will find that they seem to have the same value for slope.

But plainly they do not tell the same story. For example, one rises from left to right, the other falls from left to right.

In one case, an increase in height is related to an increase in weight in the other, an increase in height is related to a decrease in weight.

In which case is an increase in height leading to a decrease in weight?

(a) Curve A

(b) Curve B

Curve B

FRAME 14

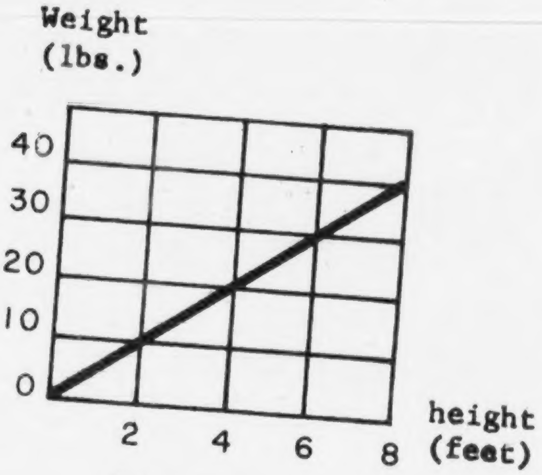


Diagram A

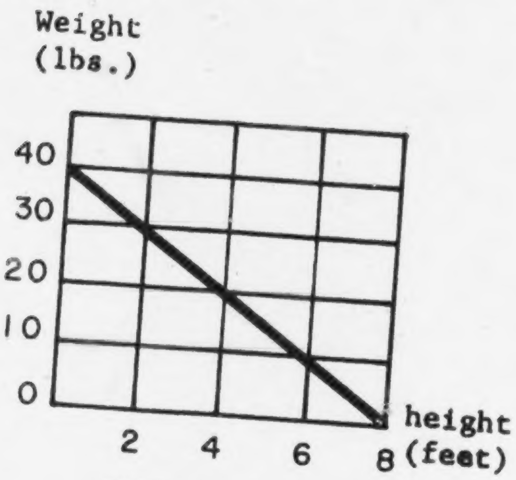


Diagram B

There's a way to tell the difference between the slopes of these two curves. We can do it by looking at the change in weight in each case.

If Input changes from 2 to 4:

In Curve A, weight changes from 10 to 20, or + 10 (plus ten)
In Curve B, weight changes from 30 to 20, or - 10 (minus ten)

For Curve A, the slope is + 10/2 = +5

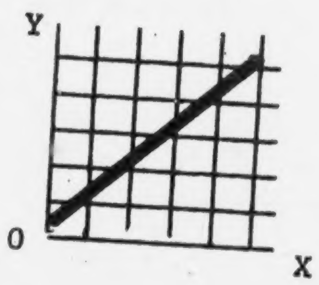
For Curve B, what is the slope?

____

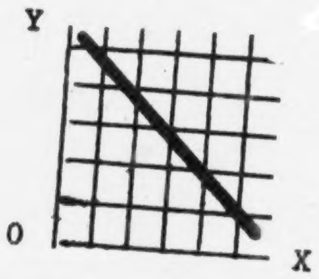
Slope of Curve B $= \dfrac{\text{Vertical change}}{\text{Horizontal change}} = \dfrac{-10}{2} = -5$

Important: note the minus sign!

FRAME 15



The sign of this slope is positive.



The sign of this slope is negative.

Note that this time we have labeled the horizontal scale X and the vertical scale Y. This is a form of mathematical shorthand and a convenient way of talking about all graphs.

(continued on the next page)

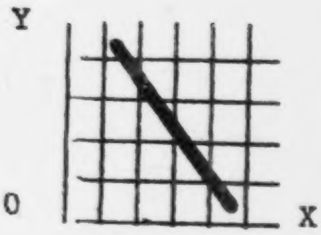
FRAME 15 (continued)

Study the graph and then complete this statement:

When the value of Y increases as the value of X increases, the sign of the slope is positive/negative.
(select one)

positive

FRAME 16



This is an example of a negative slope because when the value of Y decreases, the value of X increases/decreases.
(select one)

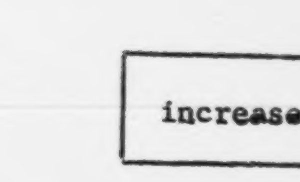
increases

FRAME 17

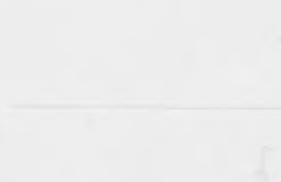
When computing the slope of a negative curve, such as the one in FRAME 16, you must remember to place a minus sign/plus sign in front of your answer.
(choose one)

minus

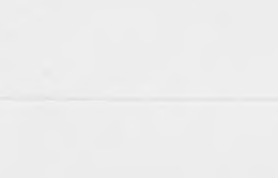
FRAME 18



______(a)



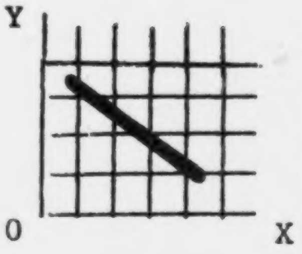
______(b)



______(c)

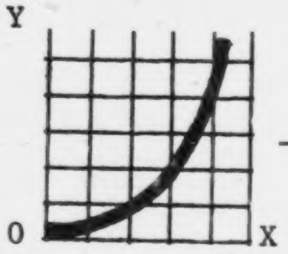
Which curve shows constant negative slope? (check one)

(b)

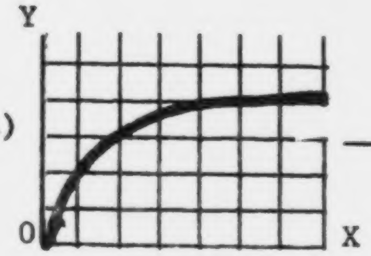


FRAME 19

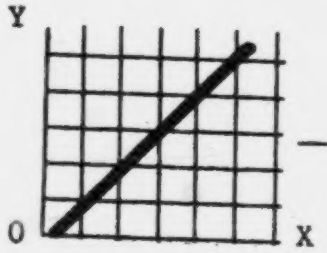
For which curve is the slope a larger positive number for bigger values of Y?



____ (a)



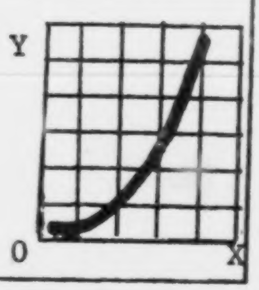
____ (b)



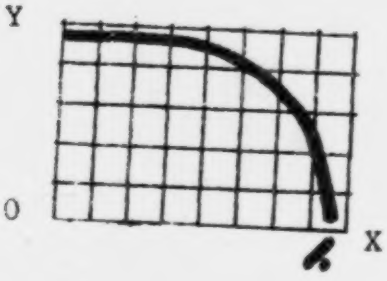
____ (c)

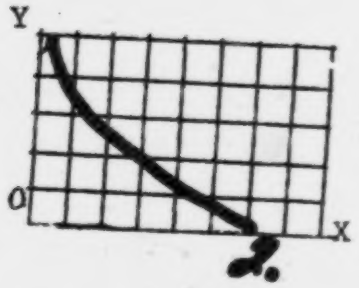
(check one)

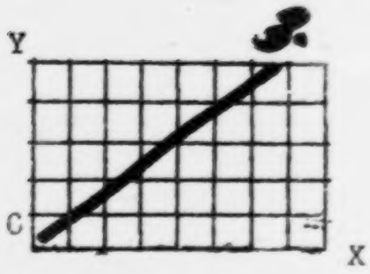
(a)



FRAME 20







The curves above are numbered 1, 2, and 3. Answer the questions below by writing the appropriate number in each blank.

(a) Which curve becomes less steep as X increases?

_____

(b) Which curve becomes steeper as X increases?

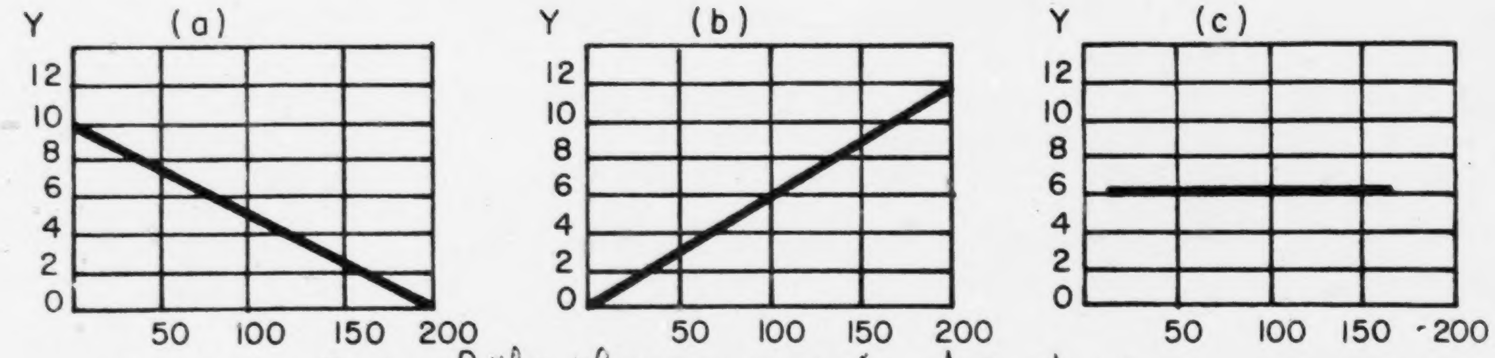
_____

(c) Which curve does not change its slope as X increases?

_____

(a) 2
(b) 1
(c) 3

FRAME 21



Each of the three curves in the above graphs has a constant slope.
See if you can calculate the slope of these three curves.

Slope for curve (a): _____

Slope for cruve (b): _____

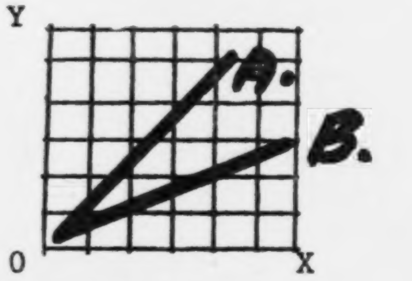
Slope for curve (c): _____

(a) -.05

(b) .06

(c) 0

FRAME 22



Above are two curves drawn on the same graph.

(a) The sign of the slope of these curves is positive/negative.
(select one)

(b) The curve with the steeper slope is Curve A /Curve B.
(select one)

(c) The curve with the greater change in Y for any change in X is Curve A/Curve B.
(select one)

(a) positive

(b) Curve A

(c) Curve A

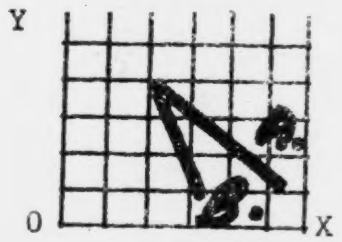
FRAME 23

The steeper the curve, the greater the change in Y that is produced for a change in X. Or, as we say, the steeper the curve, the more responsive is Y to a change in X.

In the graphs at right, which curve shows Y as more responsive to a change in X

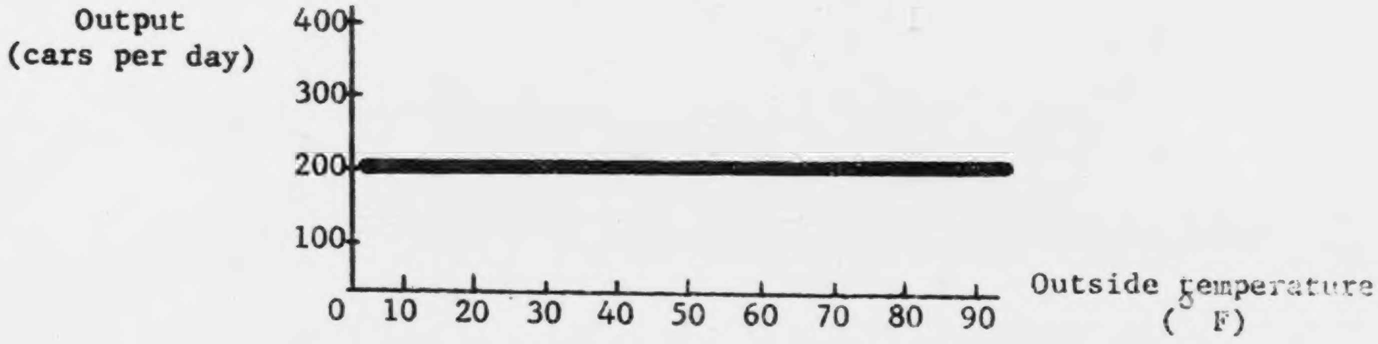
Curve A_____

Curve B_____



Curve B

FRAME 24



Answer the following questions about the graph above.

(a) Calculate the slope_____________.

(b) Output is (very/not very/not at all) responsive to a change in outside temperature.

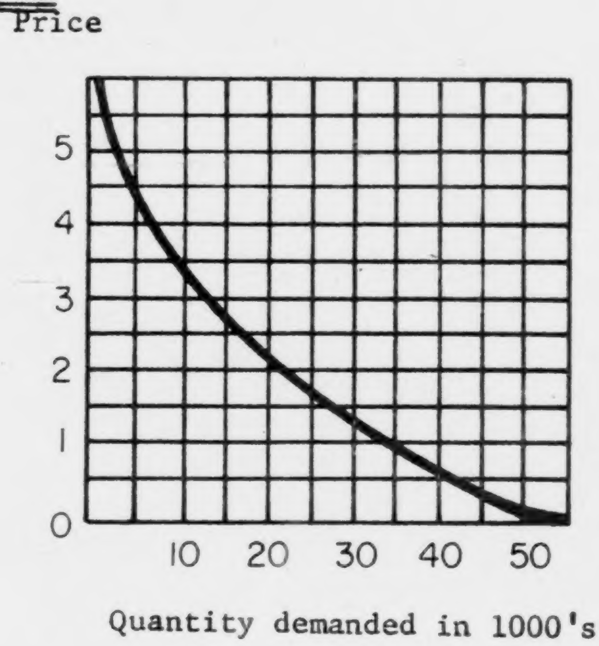
(c) There is/is no relation between output and temperature.

(a) 0 (output doesn't change.
Zero divided by any number is zero.

(b) Not at all

(c) is no

FRAME 25



Quantity Demanded	Price
25,000	$1.75
3,000	$5.00

Put a check mark against any statement that is true.

_____ (a) When the price of a record is $1.75, the number records sold is 25,000.

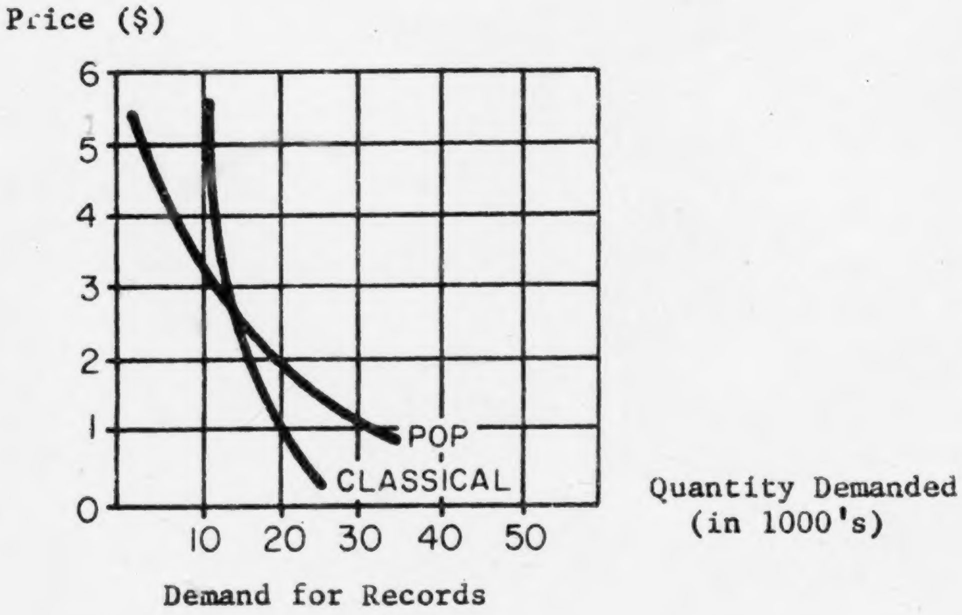
_____ (b) When the price of a record is $5.00, the number of records sold is 3000.

_____ (c) There is a negative relation between the price of records and the quantity people will purchase - that is, at lower prices, there will be a greater number of records sold.

_____ (d) Quantity sold is responsive to price changes.

All of the statements are true

FRAME 26



This graph shows demand for two kinds of records, classical and pop.

(a) For which kind of records is price more responsive to a change in quantity demanded?

_____ classical

_____ pop

(b) For which kind of record in quantity demanded more responsive to a change in price?

_____ classical

_____ pop

(a) classical

(b) pop

This tricky. It is the opposite.

FRAME 27

When we say that quantity demanded is more responsive to price for pop records than it is for classical records, what do we mean?

(a) Higher prices have less effect on quantity bought of classical records than they do on sales of pop records.

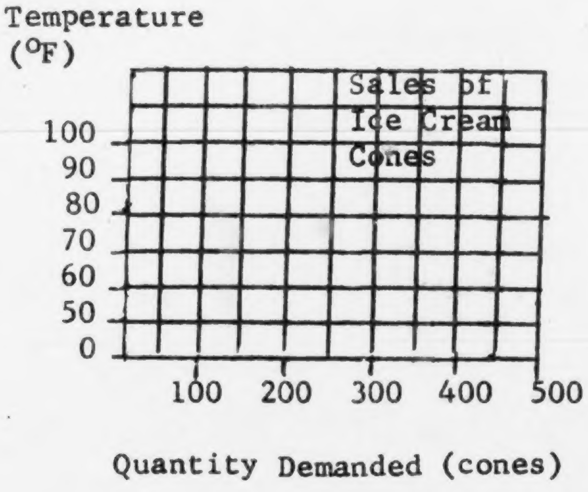
(b) A lower price does more to boost quantity bought than it does for classical records.

(c) Both of the above.

Both of the above.

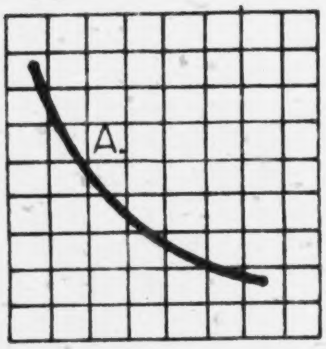
Throughout the range of prices, quantity demanded for classical records changes less than does the quantity demanded of pop records.

FRAME 28

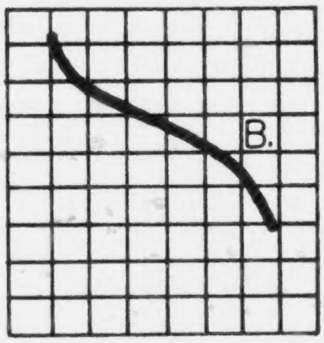


Which of the following curves is most likely to depict the relation between the temperature and the sales of ice cream cones on the above graph?

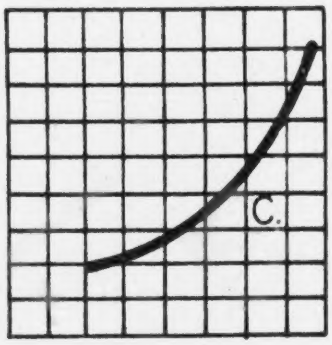
A.

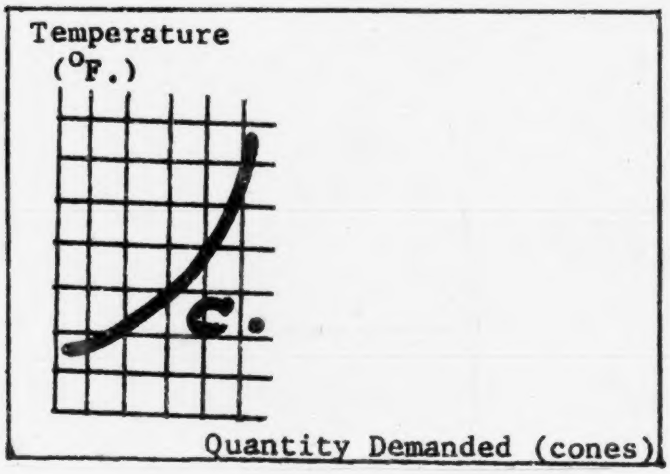


B.



C.





FRAME 29

In your own words, complete the following statement:

The sales curve for ice cream cones shows that the hotter the day

____

____

(In your own words). . .

the hotter the day, the more ice cream is sold. Eventually, however, the quantity demanded increases only slowly, presumably because there is a limit to how many cones people will consume.

FRAME 30

We have just seen how a line graph can give us a picture of the relationship between the quantity of ice cream bought and the temperature.

What is it in the graph that describes how two variables are related?

_____ (a) The squares caused by the intersecting lines.

_____ (b) The slope of the curve.

_____ (c) The size of the graph.

(b) The slope of the curve.

FRAME 31

The advantage of a line graph is that you can show the relationship between two variables...

_____ (a) very slowly and in great detail.

_____ (b) at a glance.

_____ (c) which could not be discovered otherwise.

(b) at a glance.

FRAME 32

The main purpose, then, of a line graph is to give a picture of the ____________________ between two ____________________.

relationship

variables

FRAME 33

In fact, that's what a line graph is. A line graph shows the quantitative relationship between ______________

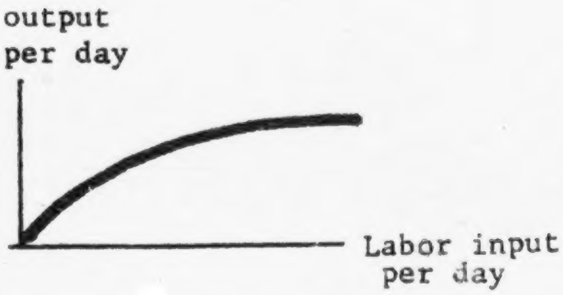
two variables

FRAME 34

(a) The curve to the right shows the quantitative relation between

_________________ and

_________________.



(b) Check the statements below which give a correct description of the quantitative relationship.

_____ (1) it is positive

_____ (2) it is negative

_____ (3) As input is increased by a certain amount, output increases but by smaller and smaller amounts

_____ (4) There is a decreasing positive slope

_____ (5) There is an increasing positive slope

_____ (6) There is a constant slope

(c) What explanation can you give from what you have learned about production for this kind of quantitative relationship between these two variables?

____

____

(a) input and output.

(b) 1, 3, 4.

(c) In your own words:

The Law of Diminishing Returns. More and more labor produces smaller and smaller increases in output because some other input is fixed.

FRAME 35

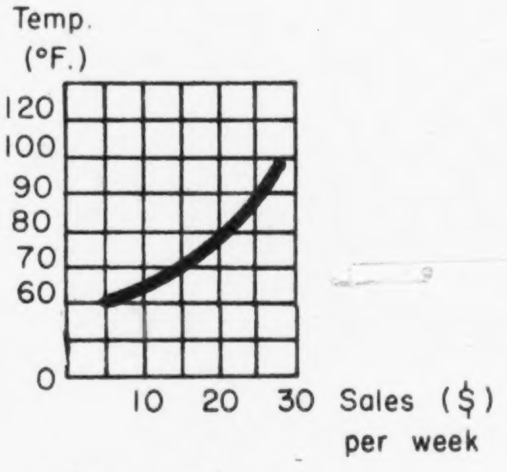


Diagram A

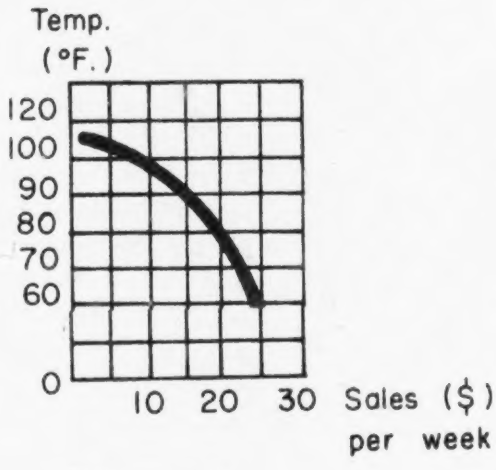


Diagram B

Here are graphs showing the amount of money taken in by two vending machines. One curve represents ice cream sales and the other sales of hot coffee.

Which curve shows coffee sales?

_____ (A)

_____ (B)

(B)

(Sales of hot coffee are likely to decrease on hot days, especially when ice cream is available.)

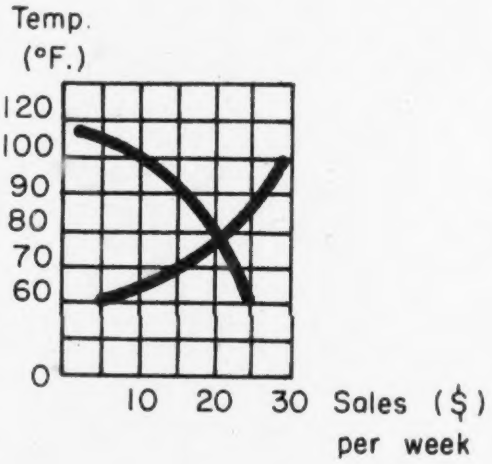
FRAME 36

In the last example, we used separate graphs for ice cream and coffee.

But could we have put both curves on one graph, as at right?

_____ (a) Yes

_____ (b) No



(a) Yes

FRAME 37

We can compare two curves, whether drawn separately or shown on the same graph ONLY WHEN the variables are the same and they are drawn to the same scale.

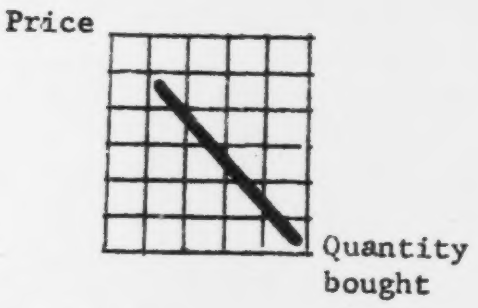


Diagram A

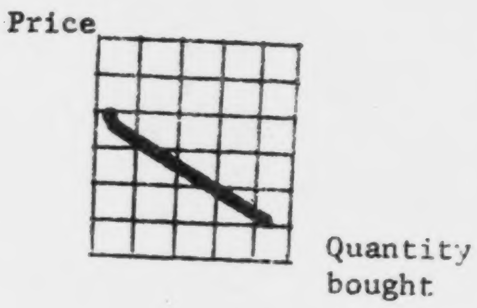


Diagram B

Examine the two graphs above carefully; then, determine if the following is a true statement.

In the graphs above, Curve A has a steeper slope than does Curve B.

_____ (a) Yes, it is true.

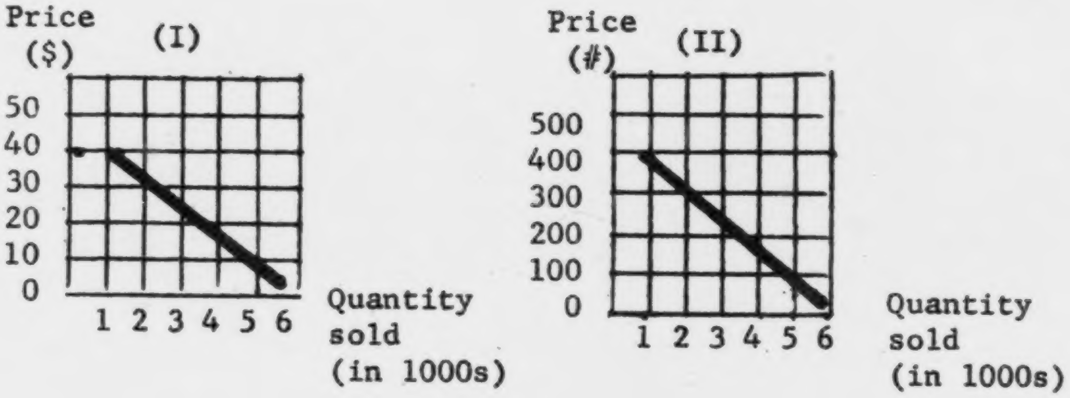
_____ (b) No, it is not true.

_____ (c) Can't tell.

(c) Can't tell.

You don't know what units of measurement are used for measuring quantity bought. Thus the quantity bought might be measured in hundreds of tons in one graph and number of items in the other. Also, there are no numbers on the scales, so we don't know whether the scales are the same on the two graphs.

FRAME 38



Do curves I and II have the same slope?

_____ (a) Yes

_____ (b) No

_____ (c) Can't tell

(b) no

The variables (price and quantity sold) are the same. But this time price scales differ. In graph I, if we look at the slope for a change in quantity from 2000 to 3000, the slope is

change in price/change in quantity

= -10/1000 = -.01

For graph II, the slope is

-100/1000 = -.1

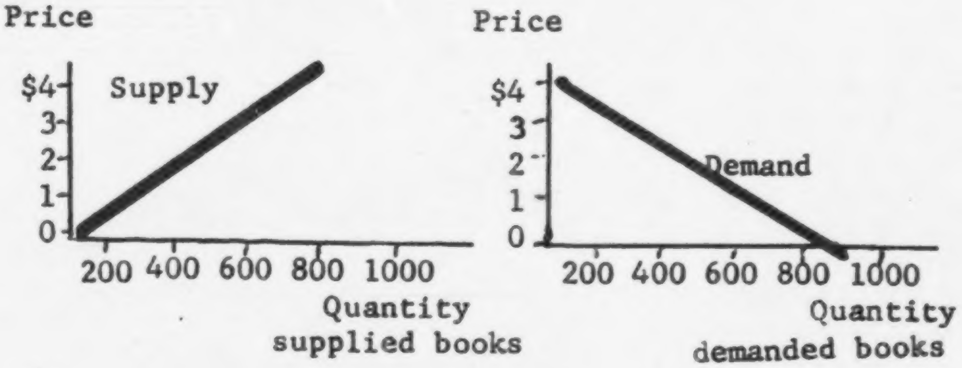
FRAME 39

Before we can use simple visual inspection to compare two curves, we have to be sure that, a) they both represent relations between variables measured by the same unit of measurement, and b) the two-measurement scales (both horizontal and vertical) are the same for both graphs.

Could we put these two curves on the same graph and compare them?

_____ (a) Yes

_____ (b) No



(a) Yes

The variables and the scales are the same.

FRAME 40

Thus, it is important to remember that you should be careful in using a graph to compare two curves unless . . . (complete the sentence)

____

____

. . . the variables and the scales are the same.

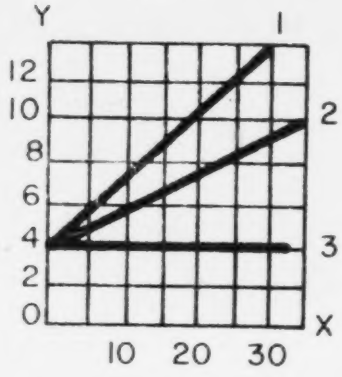
(in your own words)

UNIT II
Lesson No. 3

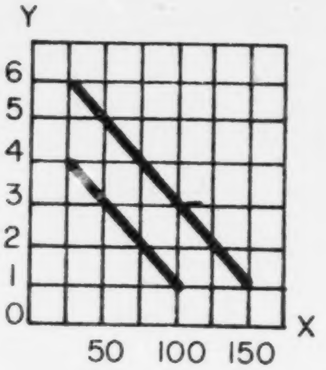
Program
CRITERION TEST

In the following questions, fill in the blanks to complete the sentence, showing calculations where necessary, and circle the correct word or letter in those cases where you are given a choice.

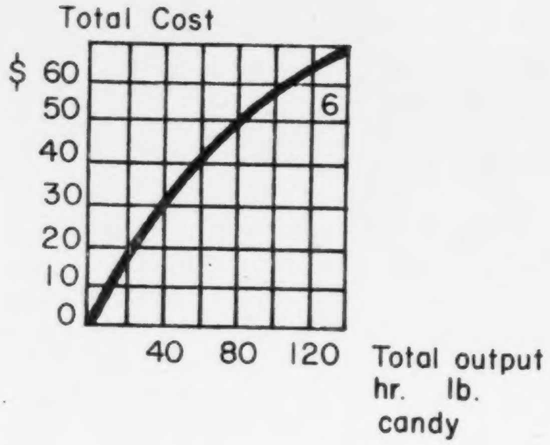
(A)



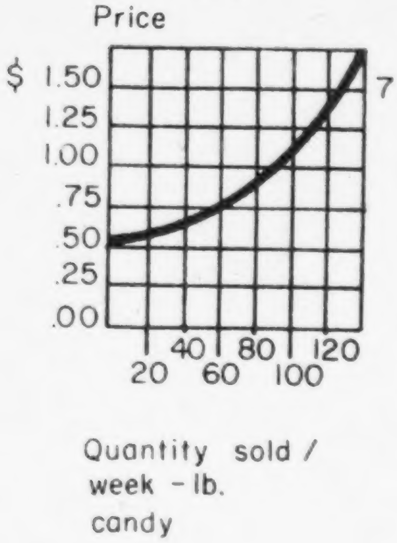
(B)



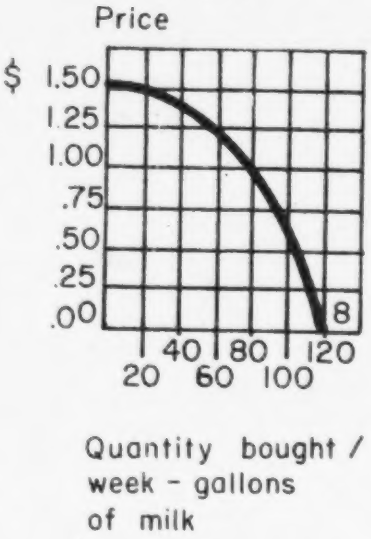
(C)



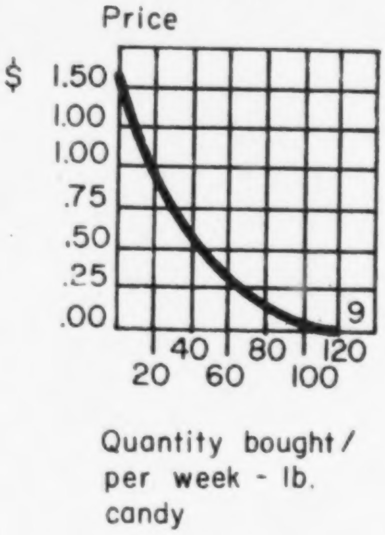
(D)



(E)



(F)



1. Curves 1 and 2 in Graph A show that as X increases, Y ____________________. that is, they show a positive/negative relation between X and Y. Another way of saying the same thing is to say that the slope of the curves is ____________________.

2. Curve 3 in Graph A shows that for any value of X, Y equals ________________. Describe in words the relation between X and Y which is shown in Curve 3.

CRITERION TEST (continued)

3. In Graph A, give the values for Y as indicated below:

(a) when X = 20, Y = ____________________ for curve 1
(b) when X = 20, Y = ____________________ for curve 2
(c) when X = 20, Y = ____________________ for curve 3
(d) when X = 30, Y = ____________________ for curve 1
(e) when X = 30, Y = ____________________ for curve 2
(f) when X = 30, Y = ____________________ for curve 3

4. Determine the slope of each of the three lines in Graph A using the formula: slope of curve = $\frac{\text{change in Y}}{\text{change in X}}$

(a) slope of curve 1 = ____________________
(b) slope of curve 2 = ____________________
(c) slope of curve 3 = ____________________

5. In Graph A, curve ________ has the steepest slope. Y is more responsive to change in X in curve ________________.

6. In Graph B, compute the slope of Curve 4 and Curve 5: slope of curve 4 = ________________, slope of curve 5 = ______________.

7. In Graphs C through F, circle whichever of curves (6) (7) (8) (9) show a negative slope.

8. In Graphs C through F, circle whichever of curves (6) (7) (8) (9) show that as X increases, Y increases.

9. In Graphs C through F, circle whichever of curves (6) (7) (8) (9) show that as Y increases, X decreases.

10. In Graphs C through F, which of the curves show a tendency for the slope to get less steep as the value of X increases? ____________________

11. In Graphs C through F, which of the curves show a tendency for the slope to get steeper as the value of X increases? ____________________

12. Circle which of curves (6) (7) (8) can be compared with Curve (9).

13. Circle which of curves (6) (7) (9) can be compared with Curve (8).

14. Write your definition of what a line graph is and say why line graphs are useful.

CRITERION TEST (continued)

15. In graph B, the relation between X and Y in both curves is positive/negative (circle one). For curve 4, if Y = 3, X = __________; for curve 5, if Y = 3 , X = __________. For any value of Y, the value of X is greater on curve ______. The fact that curves 4 and 5 are parallel to each other means that both have the same __________.

16. What does the slope of a curve tell you about the relationship described by the curve?

Unit II
Lesson No. 3

Answers to Criterion Test

1. increases
   positive
   positive

2. 4
   Y is not responsive at all to X.

3. (a) 10
   (b) 7
   (c) 4
   (d) 14
   (e) 9
   (f) 4

4. (a) 4/10 = .4
   (b) 2/10 = .2
   (c) 0/10 = 0

5. 1
   2
   3
   1

6. =1/25 = -.04; -1/25 =-.04

7. 8,9

8. 6,7

9. 8,9

10. 6,9

11. 7,8

12. 7

13. none

14. A line graph shows the quantitative relation between two variables. The shape (slope) of the line describes how the two variables are related to each other.

15. negative
    50
    100
    5
    slope

16. It tells you how much the variable measured on the vertical axis changes for a unit change in the variable measured on the horizontal axis.

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UNIT II

Lesson 3

Program 5

Defining Demand

FRAME 1

To show you how competing buyers and competing sellers establish prices and quantities sold, we are going to examine demand and supply separately.

A market, remember, is made up of both buyers and sellers, and they all help to establish the price.

Buyers will pay so much for certain quantities.
Sellers will supply so much at certain prices.

Then, what is demand?

To start with, it's another of those words which economists use precisely, so we have to be careful in defining it:

> Demand is the relationship between all of the possible prices of a commodity and the quantity buyers will take at each price on a certain day.

Which of the following shows a demand as defined above?

A. 3000 pairs of shoes

B.

Price	Quantity Demanded (# pairs shoes)
$15	2000

C.

Price	Quantity Demanded (# pairs shoes)
$20	1500
15	2000
10	3500
5	6000

C.

FRAME 2

Demand is a relationship between:

A. Buyers and sellers; B. Prices of a product and quantities demanded.

B. Prices and quantities demanded.

(Buyer-seller relationships describe a market.

FRAME 3

To state demand, it is necessary to show the whole relationship--the quantity buyers would buy at each possible price.

Demand can be described by using a table (called a Market Demand Schedule) like this:

MARKET DEMAND
Ice Cream Cones

Price	Quantity Demanded (# cones)
10¢	500
15	250
20	150
25	100
30	50

In this local market, what is the demand for ice cream cones?

(a) 500 cones at 10 cents.

(b) 500 cones.

(c) 1050 cones

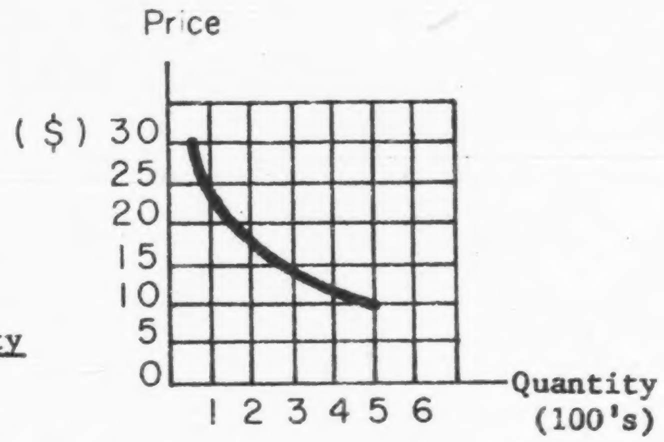
(d) The whole table.

(d) The whole table.

FRAME 4

Demand can also be described by a demand curve. Here is a demand curve made from the above demand schedule.

According to the curve, what is the quantity demanded at 13 cents?

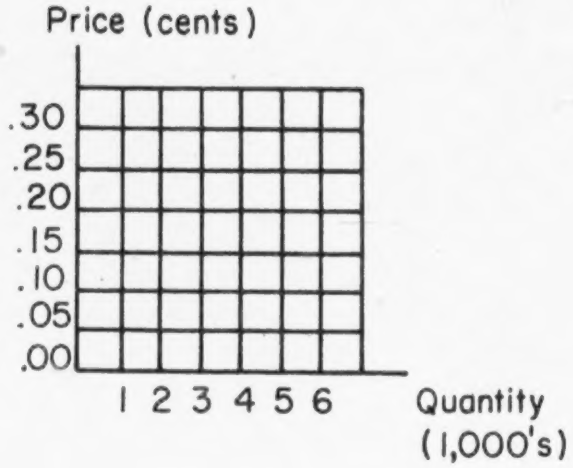


(a) 3 cones; (b) 300 cones; (c) neither (a) nor (c)

(b) 300 cones

FRAME 5

MARKET DEMAND Ice Cream Cones	
Price	Quantity Demanded (# cones)
08¢	6,000
10	5,000
15	2,500
20	1,500
25	1,000
30	500

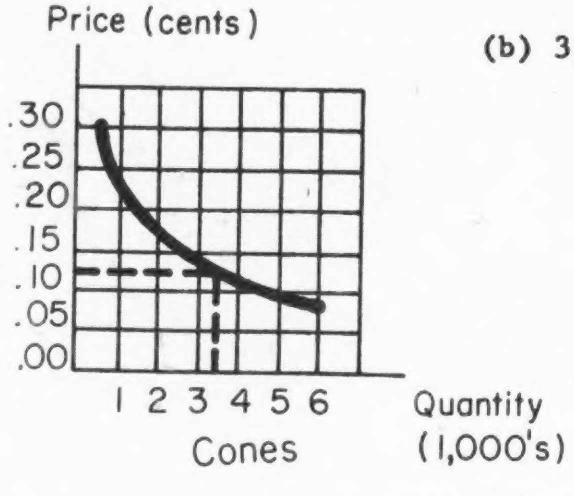


Suppose that this is a demand schedule for a larger ice cream cone market.

(a) Draw a demand curve for this demand schedule.

(b) At 12 cents, what is the approximate number of cones that will be sold?

(a)



(b) 3,500 cones

FRAME 6

Think about the definition of demand that we have given you.

Recall what makes up demand. Would an economist be likely to talk about "demand" for a good or service that does not cost anything?

_____ (a) Yes

_____ (b) No

(b) No.

The way we use the words "market" and "demand" we cannot. Demand is a price-quantity relationship. Unless price is involved, we don't have a market, we cannot have a demand.

FRAME 7

We said at the beginning that demand is another of those words which economists use with care. To define it again as briefly as possible:

Demand is the price-quantity relationship, at each price.

When an economist uses the word "demand", he means this relationship. If he wants to refer to anything else in connection with demand, he says so.

For example, he will say "quantity demanded" if he means a certain amount that people will buy at a particular price.

On a graph, demand is shown by

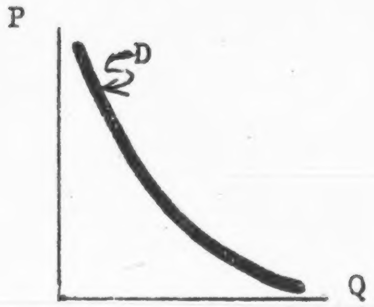
_____ (a) the vertical scale

_____ (b) the horizontal scale

_____ (c) the curve itself

(c) the curve itself

FRAME 8



On this graph:

(a) which line is used to measure quantities demanded?
horizontal/vertical ___
(choose one)

(b) which line represents demand? _____

(a) Q the horizontal scale (or axis)

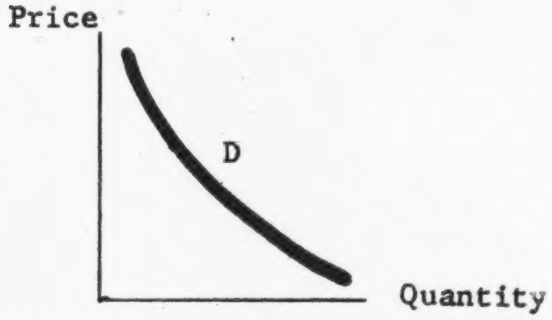
(b) D the curved line showing the price-quantity relationship.

FRAME 9

Demand is a ____________________ between price and quantity.

relationship

FRAME 10



Here's a typical demand curve. It shows the relationship between price and quantity demanded. It is typical in two ways.

Check the graph and you will see that:

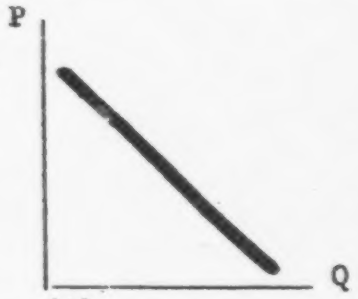
(a) The slope is negative/positive.
(pick one)

(b) Price is measured by the Horizontal/vertical axis.
(pick one)

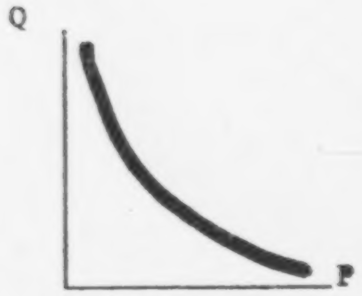
(a) Slope is negative.

(b) Price is shown on the vertical axis.

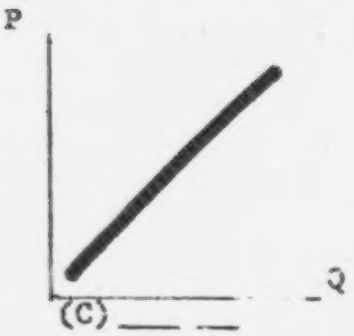
FRAME 11



(A) ______



(B) ______



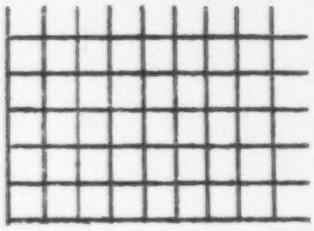
(C) ______

Which of the above represents a typical Demand curve: (BE CAREFUL)

(NOTE: P often is used as an abbreviation for Price, and
Q for quantity)

If you picked B, you were right as far as slope is concerned, but wrong about the axis. Look again. Although both demand curves B and C have a negative slope (and it doesn't matter whether the line is straight or curved), the axis are not labeled correctly on B.

FRAME 12

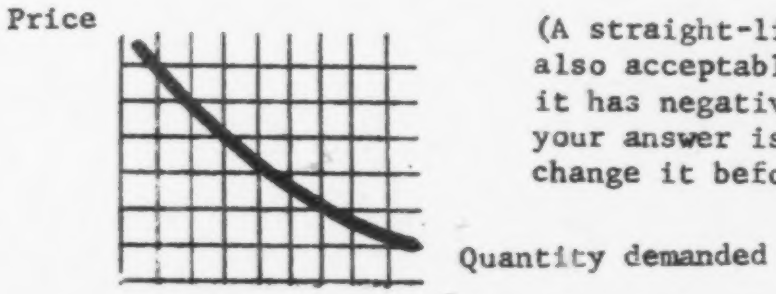


On this graph:

(a) draw a typical demand curve;

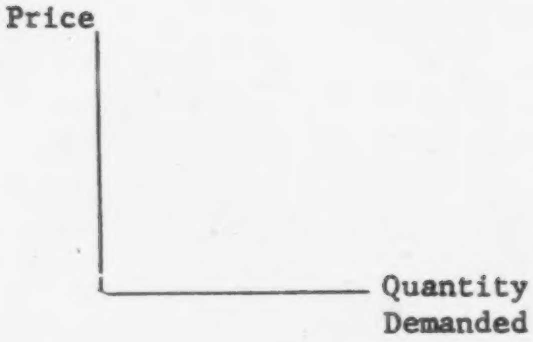
(b) label the axis which shows quantity demanded;

(c) label the axis which shows price



(A straight-line curve is also acceptable, provided it has negative slope. If your answer is not correct, change it before proceeding.)

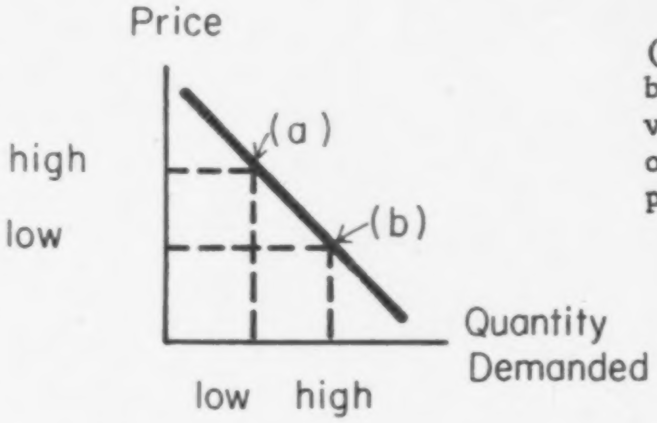
FRAME 13



On this graph, mark and label two points which show:

(a) high price and low quantity demanded;

(b) low price and high quantity demanded.



(Your points (a) and (b) need not be exactly in these positions, provided you have them in the right order. If your answer is incorrect, please change it before proceeding.)

FRAME 14

To summarize:

The negative slope of the Demand curve tells us that there is, to say it in an official way, a negative relationship between price and the quantity people will buy.

In a negative relationship, the higher the price, the lower/higher the quantity
(pick one)
people will buy.

lower

FRAME 15

This negative relationship between price and quantity isn't hard to see in real life. For example, we tend to buy more strawberries in mid-season (when the price is fairly low) than we do at the beginning of the season (when the price is high). Or, considering it from the opposite point of view, the automobile dealer hopes to sell more cars at the end of the model year by reducing prices.

Why do we tend to buy less if the price of an item goes up?

_____ (a) We can't afford it at its new price--or, at least, we can afford less.

_____ (b) We feel that the item isn't worth the new price.

_____ (c) Other things give more satisfaction for the money.

_____ (d) All of the above.

_____ (e) None of the above.

(d) All of the answers given are examples of reasons why we tend to buy less of an item when its price goes up.

FRAME 16

The change in the quantity demanded that goes along with a change in price is explained by something called the substitution effect. We don't have to delve into all the complexities of the substitution effect before we can get the general idea.

As the price of an item increases, we tend to buy less of it and we substitute something else that gives more satisfaction for the money.

See if you can complete this statement about what happens when prices decrease:

As the prices of an item goes down, we tend to buy more/less
(pick one)

and we ____________________ it for something else which can give more satisfaction for the same amount of money.

more; substitute

FRAME 17

If the price of an item goes up so much that we decide to buy another item in its place, this is an example of the ____________________effect.

substitution

FRAME 18

There's more to the substitution effect than we've explained here, but the general effect on a market is that:

(a) as prices decrease, the quantity demanded ______________.

(b) as prices increase, the quantity demanded ______________.

(a) increases

(b) decreases

FRAME 19

The slope of the demand curve is ____________.

The demand curve represents a ______________ relationship between price and quantity demanded.

negative

negative

UNIT II
Lesson No. 3

PROGRAM
REVIEW

1. Define "demand."____
____

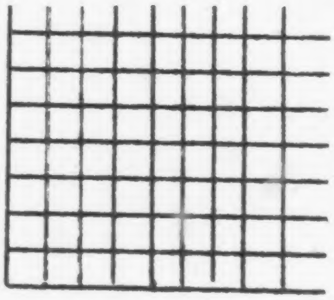
2. On this space:

   (a) draw a typical demand curve;

   (b) label the line that shows demand;

   (c) label the line which indicates quantity demanded;

   (d) label the line which indicates price.



3. A demand curve has ______________________slope.

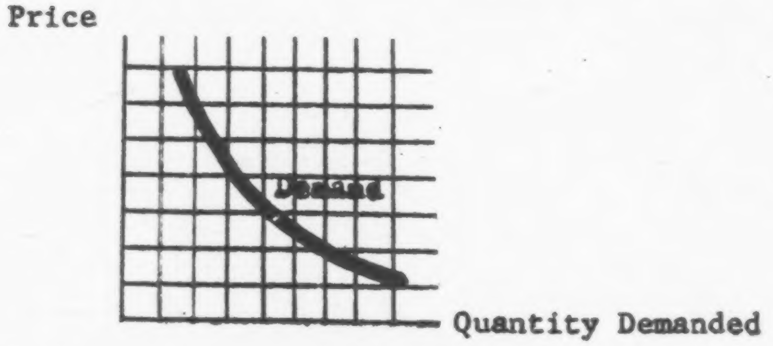
4. The way that quantity demanded changes as price changes is accounted for by the ________________________ effect.

UNIT II
Lesson No. 3

ANSWERS TO REVIEW

1. (in your own words): Demand is the price-quantity relationship. It is the relationship between all of the possible prices of a commodity and the quantity buyers will take at each price on a certain day.

2.



3. A demand curve has negative slope.

4. The way that quantity demanded changes as price changes is accounted for by the substitution effect.

Lesson 3

Program 6

DEFINING SUPPLY

FRAME 1

As you have seen, DEMAND is a relationship between prices and quantity demanded at each price.

SUPPLY is also a relationship--between prices and quantity supplied at each price.

In the case of SUPPLY, however, the higher the price, the higher the quantity supplied.

Would this be a market demand or a market supply schedule?

Price per skateboard	Quantity (demanded or supplied?)
August, 1967	
$ 6	850
8	820
10	780
12	732
14	675
16	600
18	500
20	400
22	290

_____ (a) market demand

_____ (b) market supply

(a) Market demand schedule.

FRAME 2

A market supply schedule looks like this:

Market Supply Schedule for Skateboards.
August, 1967

Price per skateboard	Quantity Supplied (1000's of skateboards)
$ 6	290
8	400
10	500
12	600
14	675
16	732
18	780
20	820
22	850

As you can see, the higher the price, the more/fewer
(pick one)
skateboards the manufacturers are willing to supply at each price.

more

FRAME 3

A demand schedule and a supply schedule are similar in that both show:

(a) that low prices correspond to high quantity.

(b) relationships between prices and quantities.

(c) negative relationships between price and quantity.

(b) relationships between prices and quantities.

FRAME 4

BUT, the price-quantity relationship evident in a SUPPLY schedule differs from that in a DEMAND schedule.

In a supply schedule:

_____ (a) The higher the price, the higher the quantity supplied.

_____ (b) The higher the price, the lower the quantity supplied.

_____ (c) The lower the price, the higher the quantity supplied.

(a) The higher the price, the higher the quantity supplied.

FRAME 5

Like the market DEMAND schedule, the market SUPPLY schedule is a model of events occurring in the market at a particular point in time.

Market Supply Schedule for Skateboards

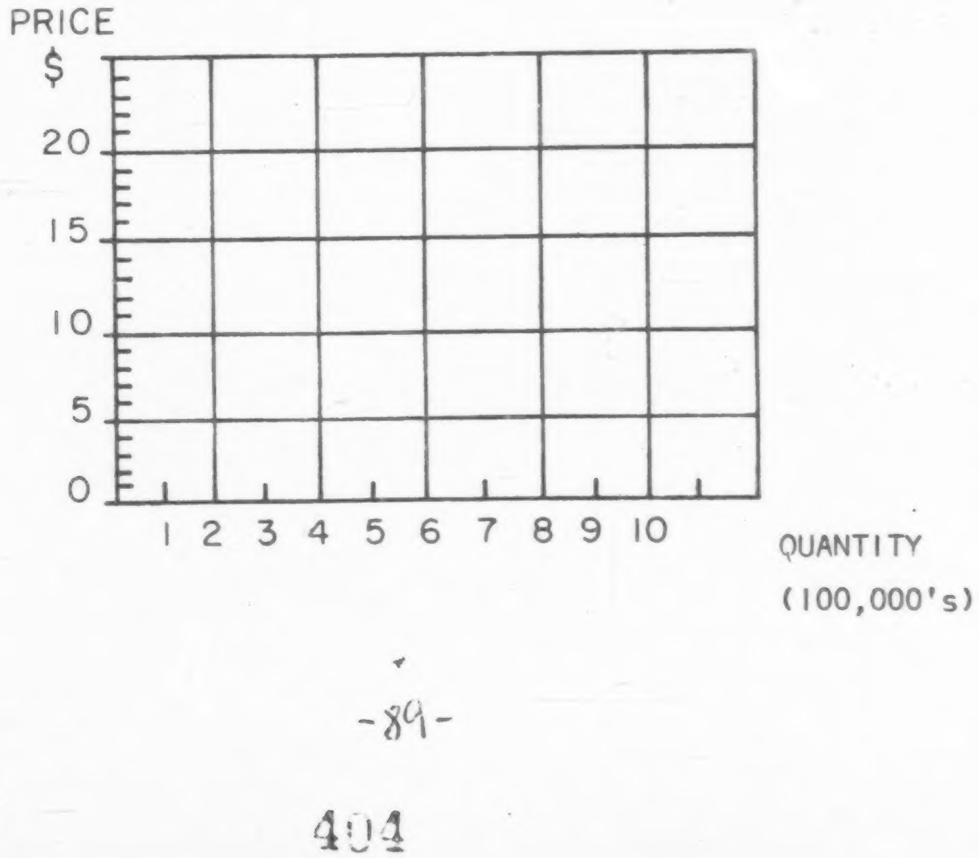
August, 1967

Price per skateboard	Quantity (1000's of skateboards)
$ 6	290
8	400
10	500
12	600
14	675
16	732
18	780
20	820
22	850

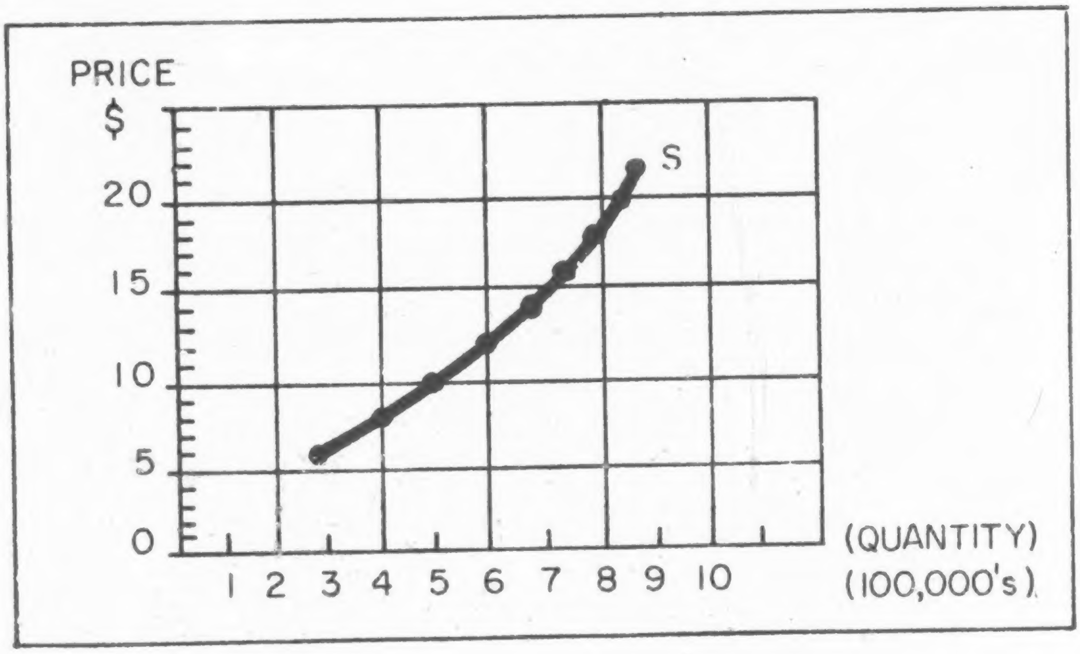
When you draw a Supply curve for the above schedule, you are simply putting the model into a different form.

Use the Skateboard Supply Schedule to plot the skateboard Supply curve in the space below.

(Note: As in demand, price is shown on the vertical scale, quantity on the horizontal scale.)



(FRAME 5 - continued)



FRAME 6

What is the price-quantity relationship shown by the SUPPLY curve?

_____ (a) Positive

_____ (b) Negative.

(a) Positive.

A SUPPLY curve has positive slope, showing a positive relation between price and quantity--the greater the quantity supplied by producers, the higher the price.

FRAME 7

Here's a quick check to see if you've got the definition of SUPPLY.

Is this statement true or false?

For the curve just drawn, at a price of $10 the supply is 500,000.

_____ (a) True

_____ (b) False

(FRAME 7 - continued)

(b) False.

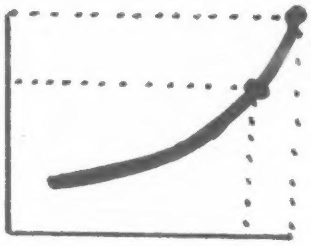
The quantity supplied at $10 would be 500,000. But Supply is the relationship between prices and the quantity supplied at each price. The whole curve describes supply.

FRAME 8

Let us emphasize again: the market SUPPLY schedule and the **SUPPLY** curve are a model of the supply side of the market at some specified point in time. It's as though all the suppliers are saying in chorus: "Right now, with all of the conditions that affect the market, for any price you want to name, these are the quantities we will supply.

A SUPPLY curve from real life often looks like the one at right:

The positive slope of the SUPPLY curve tells us that sellers will not increase the amount sold unless the price is higher.



Why do sellers insist that the price must be higher if the quantity supplied goes higher?

Diminishing marginal returns.

FRAME 9

Remember the Law of Diminishing Returns?

When one or more factors of production are fixed, increasing output by increasing other factors of production leads eventually to diminishing marginal returns.

(FRAME 9 - continued)

If you increase only some of the inputs, then equal steps of added input bring about smaller and smaller additions to output.

Or to apply that to the case of a typical skateboard manufacturer, as he tries to make more and more skateboards without increasing all of his inputs, the cost of making a skateboard keeps going:

_____ (a) up

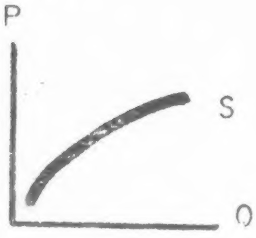
_____ (b) down

(a) up. (If you would like to review the Law of Diminishing Returns, return to Unit I, Lesson 2.)

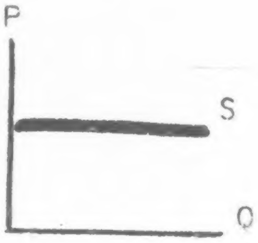
FRAME 10

One of these SUPPLY curves shows the effect of diminishing returns on supply. Which one?

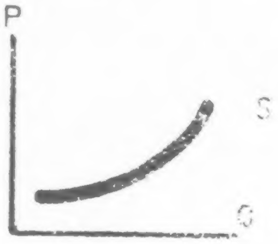
_____(a)



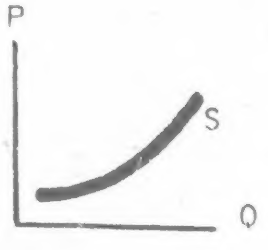
_____(b)



_____ (c)



(c)



The fact that the slope of the curve gets steeper at higher levels of output means that cost per unit increases as output increases.

FRAME 11

The SUPPLY curve is a "right now" picture of the supply side of the market. It shows what can be supplied at each price with existing, available inputs. Some of these inputs cannot be changed overnight--inputs such as size of building, number of machines, perhaps even some kinds of manpower and materials.

The Law of Diminishing Returns operates in our model of the SUPPLY side of the market because some, at least, of the inputs are_________.

fixed.

CRITERION TEST

1. Check the statements that are true:

_____ (a) SUPPLY is the quantity producers are willing to sell at any given price.

_____ (b) A SUPPLY curve has a positive slope.

_____ (c) SUPPLY is a relationship between prices and quantity supplied at each price.

_____ (d) The higher the quantity supplied, the higher the price.

_____ (e) A SUPPLY curve shows the price-quantity relationship for a specified point in time.

_____ (f) The negative slope of the SUPPLY curve indicates that returns diminish as the quantity supplied increases.

2. Draw a SUPPLY curve that shows the effect of diminishing returns on SUPPLY; label the lines that show:

(a) supply

(b) quantity supplied

(c) Price

ANSWERS TO CRITERION TEST

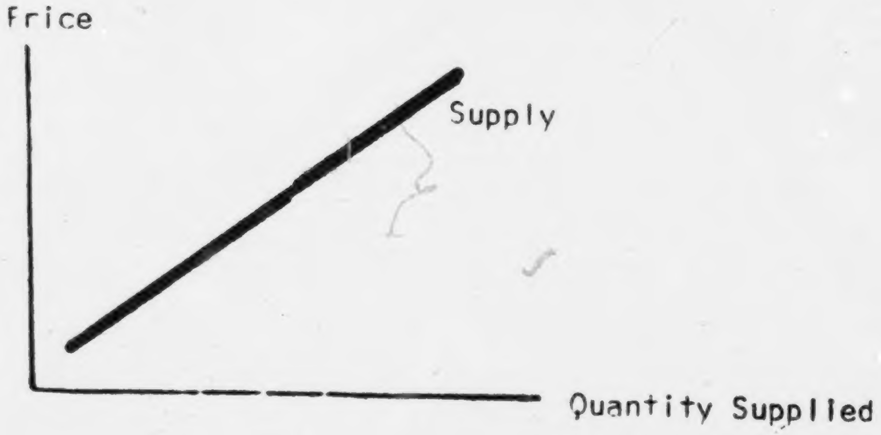
1. The statements that are true:

   (b), (c), (d), (e).

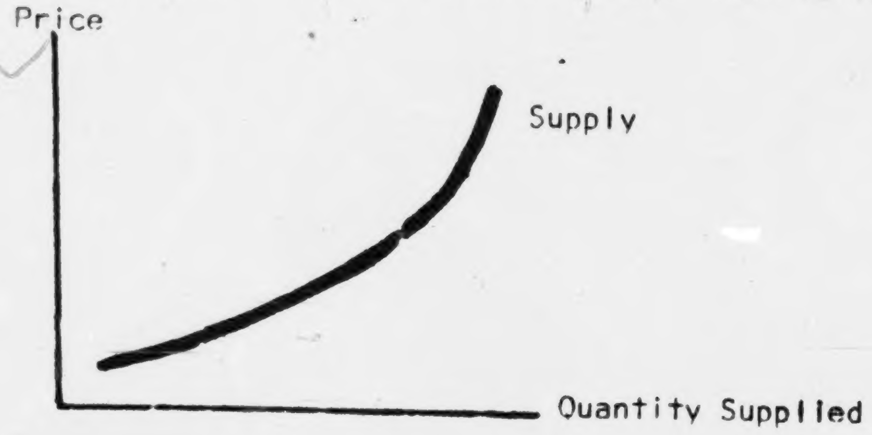
   (a) is incorrect because SUPPLY is a relationship, not one of the variables.

   (f) is incorrect because the slope of the SUPPLY curve is positive; with that change, the statement is true.

2.



Also correct is a curve with a slope that is increasingly positive:



UNIT II
Lesson 3

Program 7
PRICE DETERMINATION

Introduction

Like sportscasters giving you the pre-game rundown on two football teams, we have described Demand and Supply, but we have not said what happens when they clash head on. We have not described how buyers and sellers get together and how the final market price is determined.

In real life, the bargaining and dickering that goes on between buyers and sellers can be incredibly complicated. We can, however, keep the action fairly simple if we make use of a model. As you know, when we use a model, we often make simplifying assumptions. Earlier, for example, we assumed that Supply and Demand conditions were known and fixed.

In this case, we will use a model of a highly competitive market, and again we will assume that Demand and Supply conditions are not changing.

In a market that is highly competitive, we assume that there are a great number of small sellers and buyers, all dealing in a single product. A point to note is that when we use this model, we look only at the whole market with its many buyers and many sellers. We do not consider the actions of individuals.

FRAME 1

In a "highly competitive market," can any one buyer or any one seller influence the market? Why?

____

____

No. In a highly competitive market, we look at the whole market. Our model simplifies the action and gives us a wide-angle view of the entire picture. What a single buyer or seller does can't alter that picture. (one person can join a crowd or leave it--from a rooftop you can't tell the difference.)

FRAME 2

Now consider Supply and Demand curves. If you add or subtract a buyer or seller from a highly competitive market, is there any effect on the curve?

_____ (a) Yes

_____ (b) No

No. It takes the combined behavior of a great number of buyers and sellers to have any real effect on Supply and Demand in this kind of market. (That's a Supply and Demand condition we haven't mentioned before, but take note of it.)

FRAME 3

The kind of market we'll be talking about here is one in which there are so many sellers that a single firm can enter or leave the industry without affecting the Supply or Demand curve. A few buyers can come or go unnoticed, too, for the same reason.

What do we call this kind of market?

____

(FRAME 3 - continued)

Highly competitive.

FRAME 4

Think about competition for a moment. Competition among buyers tends to force prices up/down.
(pick one)

Up.

FRAME 5

When there's shortage of a particular product, competition among buyers tends to force prices up.

Let's see what heppens if there is too much of a product. If the quantity supplied exceeds the quantity demanded,

(a) there is competition among buyers/sellers.
(pick one)
(b) price tends to go up/down.
(pick one)

An excess of quantity supplied
(a) leads to competition among sellers
(b) and tends to force price down.

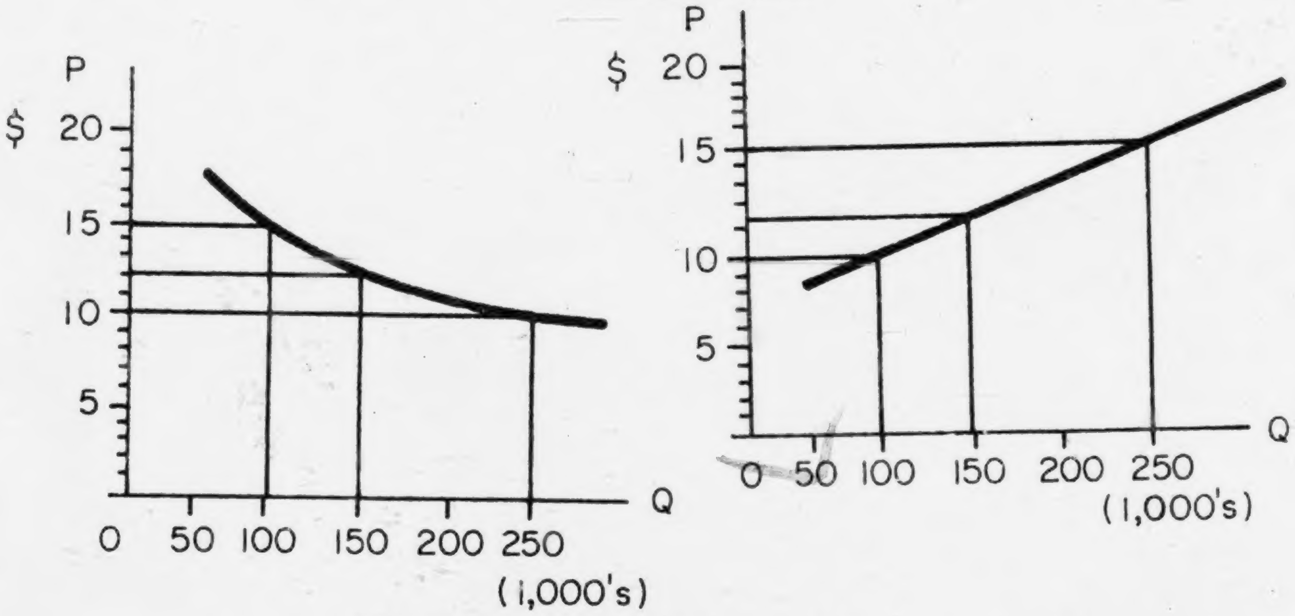
FRAME 6

In general, then:

- If there is too little of a product available, competition among buyers tends to force prices up.
- If there is too much of a product available, competition among sellers tends to force prices down.

Now let's look at that more carefully in the price-quantity relationship of Demand and Supply. To do so, we'll construct our model of a highly competitive market:

Market Demand and Supply of Boys Sports Jackets
July 7, 1967



(Please refer to these graphs for frames 6 through 9)

According to the graphs, at a price of $15:

The quantity supplied is______________________________.

The quantity demanded is______________________________.

(a) 250,000
(b) 100,000

FRAME 7

If suppliers make available 250,000 of these jackets at $15 each, how many will be sold?

____

At $15, the quantity demanded is only 100,000. Suppliers will have an excess quantity of 150,000.

FRAME 8

If the suppliers want to sell 250,000 jackets, at what price must they sell them?

____

$10. The Demand curve shows that to sell 250,000, the price must be $10.

FRAME 9

(a) For 150,000, what price are buyers willing to pay?

____

(b) For 150,000, at what price are suppliers willing to sell?

____

(a) $12
(b) $12

FRAME 10

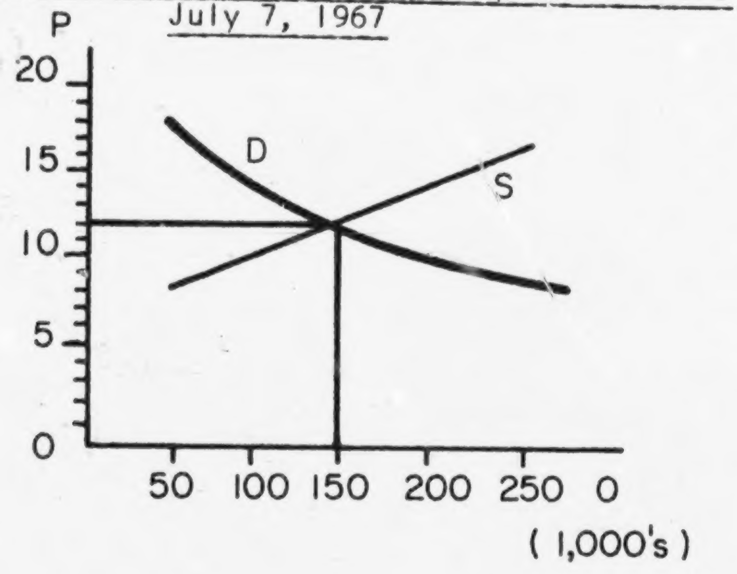
According to the graphs,

(a) How many prices are there at which the quantity suppliers will sell equals the quantity people will buy?

(b) What is the price?

(a) one
(b) $12

FRAME 11


Market Demand and Supply for Boys' Sports Jackets July 7, 1967

Here we have combined the Demand and Supply curves you have just been studying. This diagram is a model of the sports jacket market on July 7, 1967. (For Frames 11 to 13, please refer to the graph above.)

There is one price at which quantity demanded and quantity supplied are the same. This price we will call the market equilibrium price.

What can we say about the curves for Demand and Supply at the market equilibrium price?

____

____

(FRAME 11 - continued)

> The answer we hoped for was that at the market equilibrium price (in this case, $12), the Demand and Supply curves intersect.

FRAME 12

The price at which the Demand and Supply curves intersect is called the

________________________price.

> Market equilibrium price.

FRAME 13

Why is it called the equilibrium price?

Because at that price (in your own words) ____________________________________

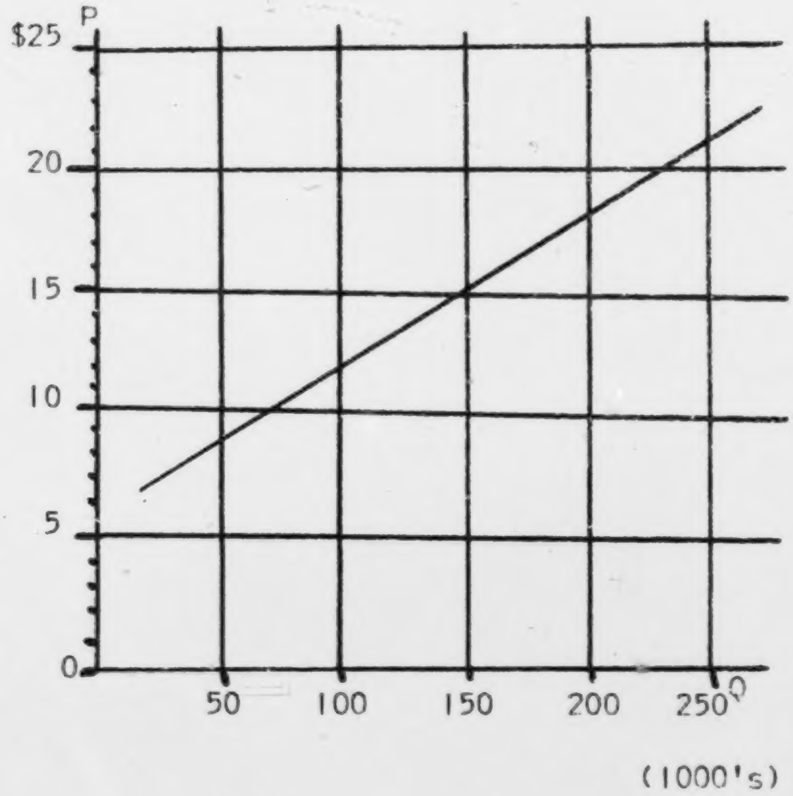
____

> The quantity that buyers are willing to buy is equal to the quantity that sellers are willing to take. There is an equilibrium or balance at this price.

FRAME 14

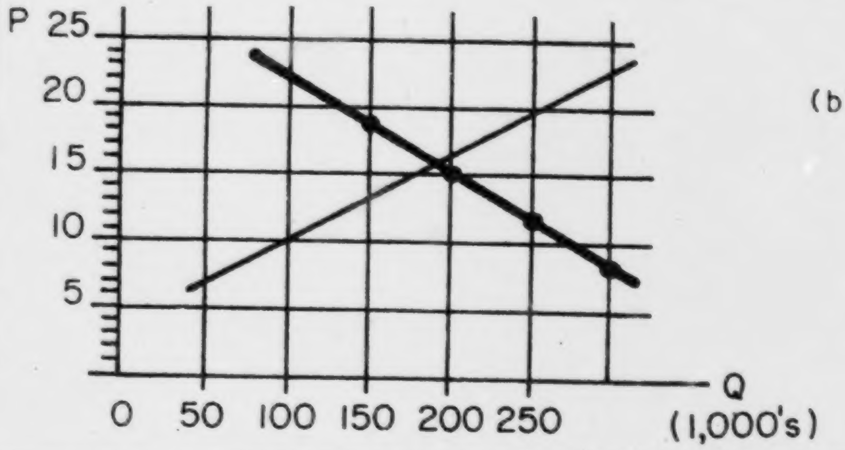
Here's a Supply curve for men's dress slacks for August 16, 1967.

(a) on the same graph, draw a Demand curve from this schedule:



Market Demand Schedule for Men's Dress Slacks August 16, 1967	
Price	Quantity
$18	100,000
15	150,000
12	200,000
9	250,000

(b) What is the equilibrium price?



(b) $15

FRAME 15

Now let's see what happens if the price is below the equilibrium price.

Suppose that the price is at $9.

(a) What is the quantity demanded? ____________

(b) What is the quantity supplied? ____________

(FRAME 15 continued)

(a) 250,000
(b) 50,000

FRAME 16

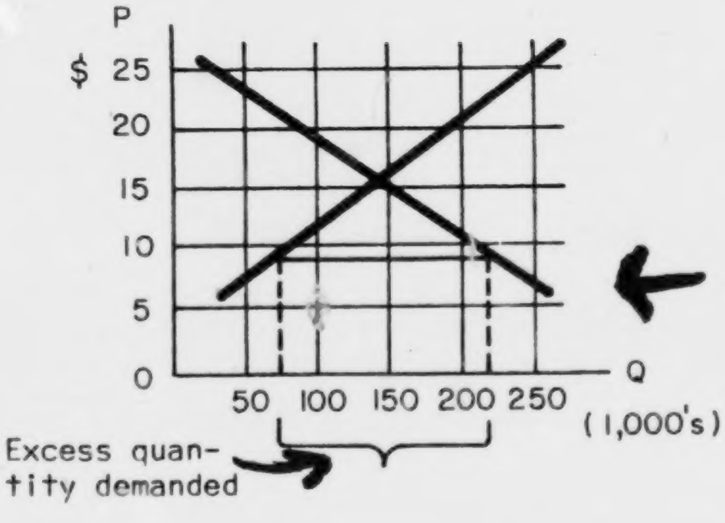
At $9, quantity demanded exceeds quantity supplied by

250,000 - 50,000 = 200,000

When there's a shortage of a particular good or service at a particular price, what happens to price?

_____ (a) price increases

_____ (b) price decreases.



(a) Price increases.

FRAME 17

Why does price increase when there's a shortage (i.e., when the quantity demanded is less than the quantity supplied)?

(in your own words) ______________________________

____

There's competition among buyers.

FRAME 18

(For frames 18 to 20, please refer to the following table.)

Market Demand and Supply Schedule for a product for one week

Price $	Quantity of Product per Week	
	Market Demand	Market Supply
1	5000	3000
2	4500	3500
3	4000	4000
4	3500	4400
5	3000	4700
6	2500	4900
7	2000	5000

(a) What is the equilibrium price? $ ____________

(b) What quantity is sold at this price? ____________

(a) $3; (b) 4000.

FRAME 19

If manufacturers make 4400 of these articles in a week and offer them for sale at $4, what will happen?

(in your words) ____________________________

____

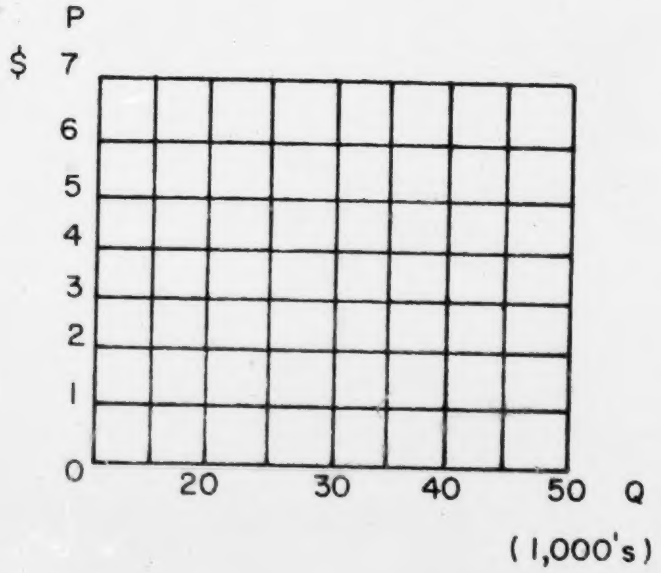
The price is too high to sell the full 4400. Quantity supplied exceeds quantity demanded by 4400 - 3500 = 900.

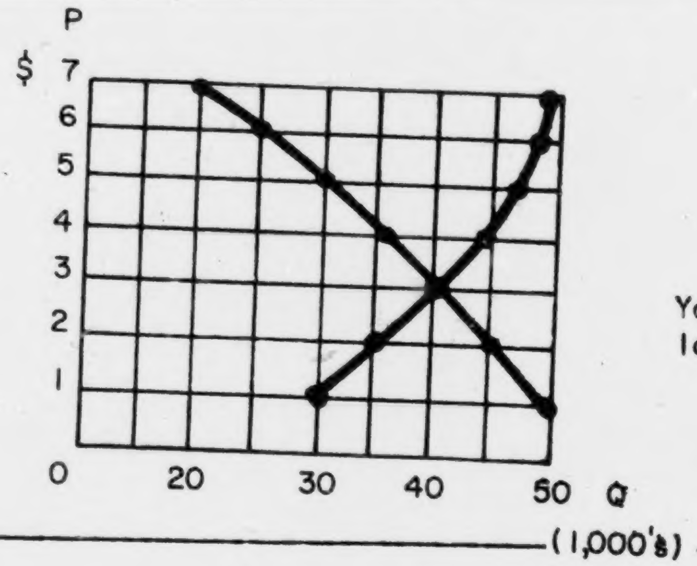
FRAME 20

The equilibrium price is one at which buyers can buy all they want and sellers can sell all they want--it represents the market in balance.

Now it's your turn to construct a model of a market. Using the table we gave you in Frame 18, assume that there are fixed Demand and Supply conditions and graph the supply and demand curves for the product.

Plot both curves on the graph below:

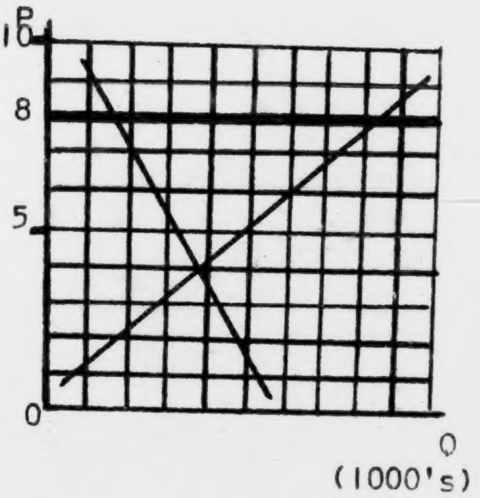




Your graph should look like this one.

FRAME 21

In this market, at $8 the quantity supplied exceeds quantity demanded. Is the eight-dollar price too high or too low?



Too high.

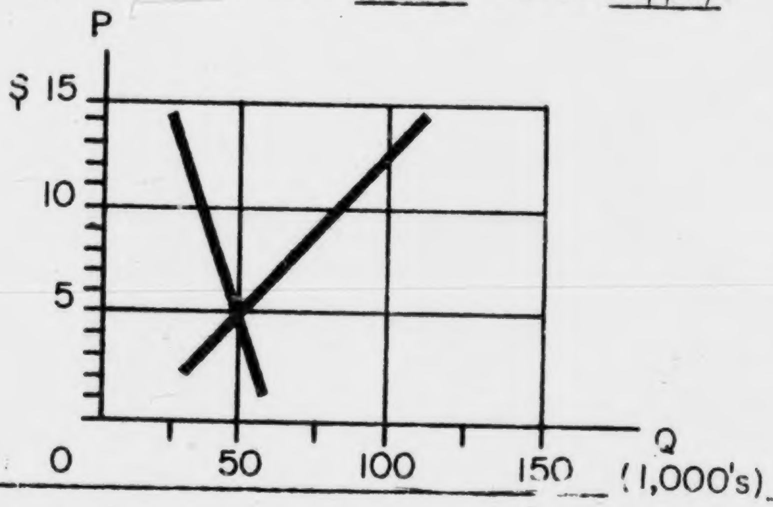
FRAME 22

At which of the following prices does demand exceed supply?

_____ (a) $8

_____ (b) $5

_____ (c) $3

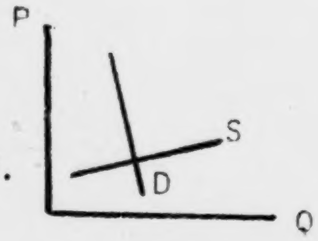


(c) At a price of $3, quantity demanded exceeds quantity supplied

FRAME 23

At the equilibrium price for this market, quantity demanded is:

greater than / equal to / less than quantity supplied.
(pick one)



(FRAME 23 - continued)

Quantity demanded is equal to quantity supplied. If there is no excess of Supply or Demand, price is in equilibrium.

FRAME 24

At the equilibrium price, why won't competition between buyers and sellers make price change?

(in your own words) ________________________________

____

____

At that price, quantity supplied equals quantity demanded. Everyone in the market can be satisfied. With the price in equilibrium, buyers can buy as much as they want and sellers can sell as much as they want.

FRAME 25

When quantity supplied exceeds quantity demanded, you would expect to find that the price is:

greater than / equal to / less than the equilibrium price.
(pick one)

greater than.

FRAME 26

When quantity demanded exceeds quantity supplied, you would expect to find that the price is:

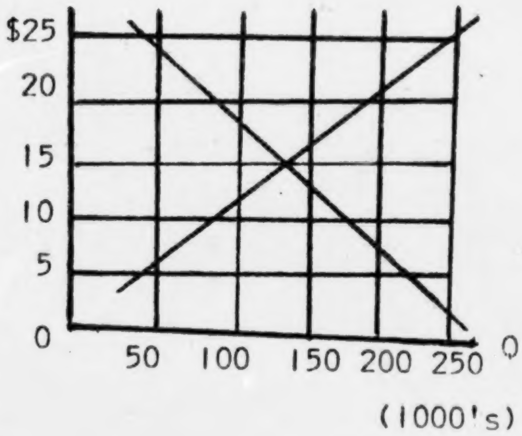
greater than / equal to / less than the equilibrium price.
(pick one)

(FRAME 26 - continued)

less than

FRAME 27

In the market depicted by this graph, a price of $20 would lead to an excess of:



quantity supplied / quantity demanded.
(pick one)

quantity supplied (There is an excess quantity supplied of 100,000.)

FRAME 28

Why will manufacturers generally be unable to sell all of their output at $20?

The price is too high to induce buyers to buy as much as sellers want to sell. (Since, on the whole, buyers won't patronize sellers whose prices are too high, sellers will come down to the equilibrium price.)

FRAME 29

Do you have any idea why sellers don't just keep the price up at $20 and sell less?

(Answer in your own words)

(FRAME 29 - continued)

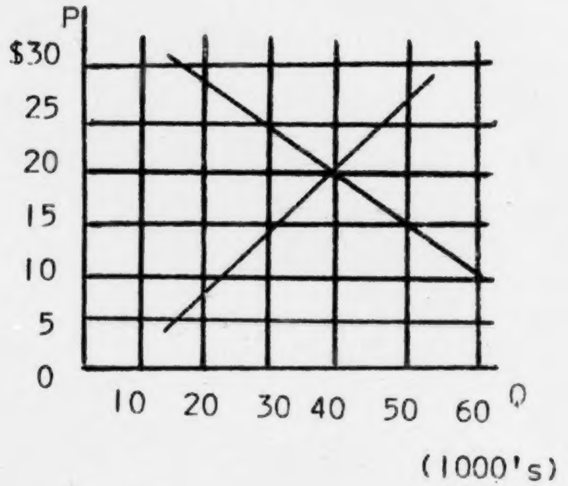
In a highly competitive market, sellers can't just set a price arbitrarily and stick to it--there will always be some sellers reducing price to make more sales. This is why we chose such a market for our model rather than a market dominated by a single supplier. A single supplier could fix price any place he pleased. In the kind of market we have been discussing, however, what a single firm does cannot affect the curves at all.

CRITERION TEST

1. In this market, what is the equilibrium price and quantity?

   (a) Price ____________________

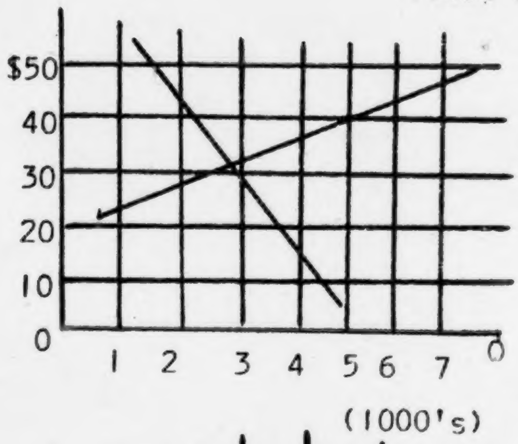
   (b) Quantity ____________________



2. At the moment the market price is $40 and there is excess quantity. Is the excess one of

   Demand or of Supply?

   ____

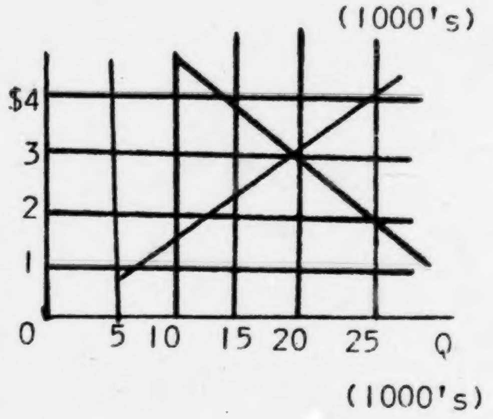


3. Here, at a market price of $4 quantity supplied exceeds quantity demanded by: (choose one)

   ____ (a) 20,000

   ____ (b) 10,000

   ____ (c) 5,000



4. In the market above, is a price of $4 too high or too low? __________

5. Why doesn't competition between buyers or between sellers force the price away from the equilibrium level once it gets there?

   (Your own words) ______________________________

   ____

   ____

ANSWERS TO CRITERION TEST

1. (a) Price: $20

   (b) Quantity: 40,000

2. Supply

3. 10,000

4. Too high

5. The equilibrium price is one at which buyers can buy all they want and sellers can sell all they want. Since at that price there is no excess of quantity demanded or of quantity supplied (they equal one another), buyers and sellers are satisfied with the price the way it is.

LESSON 3

UNIT II
Exercise 2

SUMMARY QUESTIONS ON MARKETS, SUPPLY & DEMAND AND PRICE DETERMINATION

1. DEFINING A MARKET

For the following market situations, try to figure out whether the market is a local, regional or national market. In column 3, give your reasons for your decisions about the geographic extent of the market.

COLUMN 1 The Market	COLUMN 2 Geographic Limit	COLUMN 3 Reasons for your Decision
1. Cigarette sales by the manufacturers		
2. Retail car sales		
3. Sale of TV repair services		
4. Jet plane sales by manufacturers		

2. Most demand curves have a negative slope; people buy more of the product at lower prices. Explain why this is true for most products.

3. Supply curves have a positive slope; sellers will not sell more unless the price increases. Explain why this is true.

4. The following table is a model of the demand for and supply of gidgets for a particular week. The market is perfectly competitive.

I PRICE GIDGET	II MARKET DEMAND QUANTITY PURCHASED PER WEEK	III MARKET SUPPLY QUANTITY SOLD PER WEEK
1.00	5000	3000
2.00	4500	3500
3.00	4000	4000
4.00	3500	4400
5.00	3000	4700
6.00	2500	4900
7.00	2000	3000

a. What will be the market price and quantity sold per week in this model?

PRICE____________________________

QUANTITY SOLD ____________________________

b. Prove that there is only one possible stable market price by describing what would happen in the market if the price were $1.00; if the price were $7.00

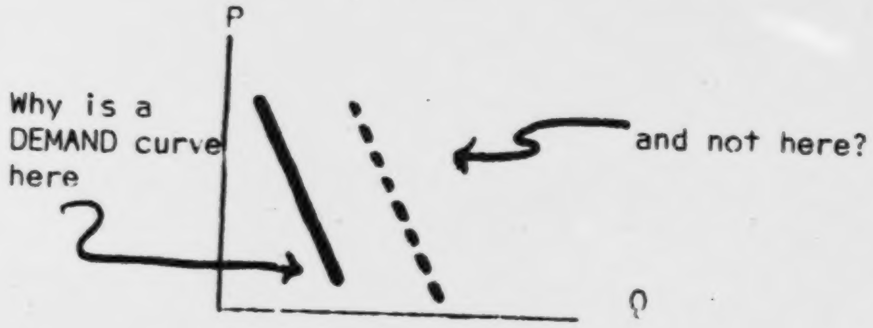
Lesson 4

Program 8

DEMAND CONDITIONS

FRAME 1

There's more to a demand curve than meets the eye! As a model of consumers' willingness to buy, a demand curve does a vast job for the economist. It not only summarizes the relationahip between the quantities of a product demanded at each price, but it also reflects conditions that determine that relationship.



The curve tells us that buyers will buy certain amounts at certain prices. But why those amounts at those prices? Why is there one demand schedule for, say, deluxe bathtub plugs one day and another demand schedule for another day? What conditions cause the price-quantity relationship to change? There's always a combination of reasons:

> tastes change, so do such things as income, expectations of future income, the cost of borrowing money, and the price and nature of substitutes--to name a few.

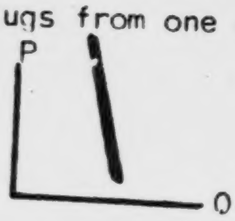
GO AHEAD TO THE NEXT FRAME

FRAME 2

Suppose that today there are more buyers who are shower-takers than there are tub-soakers. Yesterday, the situation was reversed and more tub-soakers were shopping.

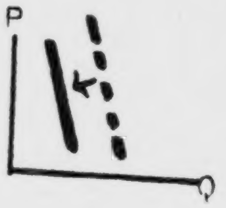
What happens to the demand curve for bathtub plugs from one day to the next?

Yesterday, when more tub-soakers were shopping, the curve looked like this . . .



Demand for bathtub plugs

Today, with more shower-takers shopping, the demand curve for bathtub plugs looks like this . . .



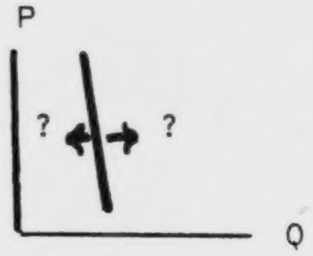
(FRAME 2 - continued)

Conditions have changed. Buyer's tastes are not the same today as they were yesterday.

The curve has shifted to the left because DEMAND for the plugs has increased/decreased.
(pick one)

decreased

FRAME 3



When DEMAND decreases, is the new DEMAND curve on the right or on the left of the old one?

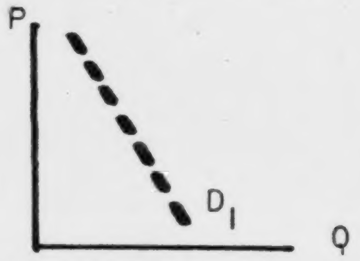
_____(a) right

_____(b) left

on the left

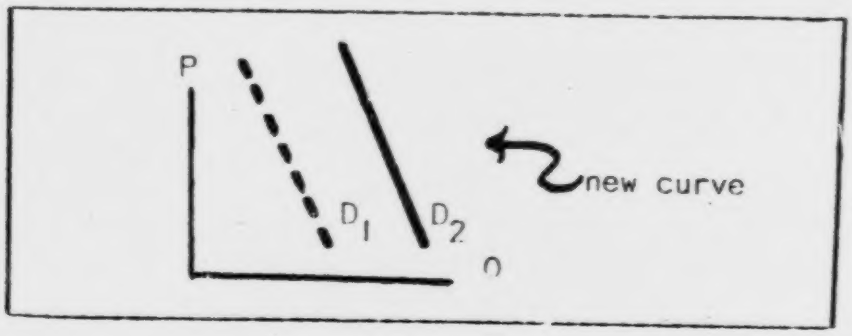
FRAME 4

When DEMAND increases, the new DEMAND curve will be on the right.



When DEMAND changes, the entire curve shifts on the graph. The result is a new curve, in a new location.

On the graph above, draw in a new curve, D_2, that indicates an increase in DEMAND.



FRAME 5

When DEMAND increases, the DEMAND curve shifts to the right.

When DEMAND decreases, the curve shifts to the left.

The curve is a model which reflects the conditions determining the price-quantity relationship at a particular time. (There is always just one DEMAND curve. The dotted line on the graph represents a curve that no longer exists.)

Suppose you examine the DEMAND curve for some item for last Monday and the Monday before that. You find that the curve is the same for both days. Is the following statement true?

If there have been any changes at all in DEMAND conditions for that item, they have probably been small and of a kind that cancel each other out.

_____(a) True

_____(b) False

True

The DEMAND curve is, if you like, a summary of the DEMAND conditions. If the curve is unchanged from one date to another, there has probably been no change in DEMAND conditions.

FRAME 6

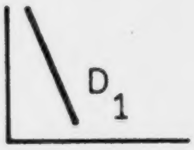
The location of a DEMAND curve for any good or service--at any one time--depends on all kinds of conditions.

(FRAME 6 - continued)

Taste was an example of one DEMAND condition; income is another. The more money people have available to spend, the more DEMAND will increase.

Take a DEMAND curve for lawn furniture in a particular area.

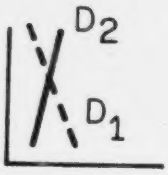
If the curve looks like this when incomes are low . . .



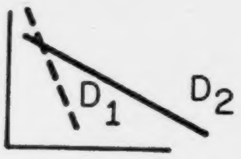
How might the new curve look when incomes are high?

(check one)

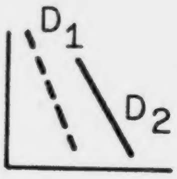
_____(a)



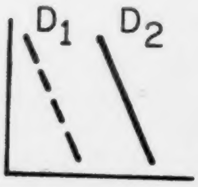
_____(b)



_____(c)



(c)



The entire DEMAND curve would shift to the right if income went up, since DEMAND would increase.

FRAME 7

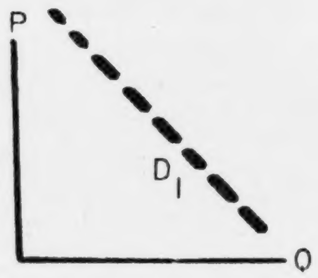
A change in current income is not the only demand condition that can bring about an increase or decrease in DEMAND. Expectations of future income can do the same thing.

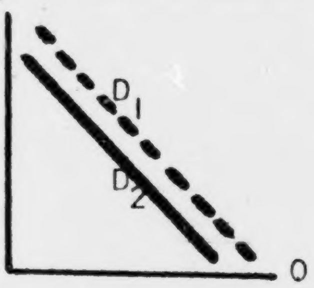
For example, **rumor sends** housewives to markets on "stocking up" sprees, and their husbands decide to buy that extra set of tires "just in case."

Or, talk in a cotton town that "the mill may close down" could have an overall effect on consumer purchases; fear of unemployment would decrease DEMAND for goods and services throughout the cummunity.

Suppose that curve D_1 represents current DEMAND for a new garbage disposal unit in the cotton-mill town.

Draw a new curve (D_2) to show which direct direction the DEMAND curve would shift.





The curve shifts to the left when DEMAND decreases.

FRAME 8

There are many DEMAND conditions. What all of them have in common is that they are variable. The conditions that apply at one time can be different at another time.

Consider interest rates. If they go down, the cost of borrowing money goes down, making it easier for people to get loans. As a result, buyers may think about doing some building or remodeling.

DEMAND for construction services and materials might be expected to go up.

If DEMAND for construction goes up what kind of change would this condition cause in a DEMAND curve for lumber?

The new curve would be on the right/left of the old one.
(choose one)

right

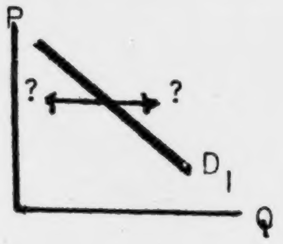
FRAME 9

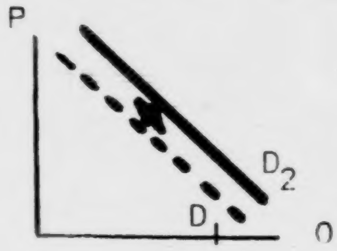
Another DEMAND conditon we listed earlier was "the price of substitutes."

DEMAND for an item will change as the price of its substitutes change.

For example, if the price of substitute breakfast drinks (also containing vitamin C) rose as high as orange juice itself, would DEMAND for fresh orange juice increase or decrease? Show your answer by putting the new curve for orange juice demand on this graph:

DEMAND
CURVE
FOR
FRESH
ORANGE
JUICE





DEMAND for fresh orange juice would increase because there would no longer be any price advantage in buying a substitute product.

(If the price of orange juice substitutes goes down, DEMAND for orange juice will decrease.)

FRAME 10

There are many factors affecting the position of a DEMAND curve.

We have talked about changes in taste, income, income expectations, the cost of borrowing, and the price and nature of substitutes, You may be able to think of other examples.

DEMAND increases or decreases depending on conditions at any given time.

Since conditions always are changing, so is the relationship between price and quantity demanded--the two variables that give us a DEMAND curve.

(a) When a DEMAND curve shifts to the left, DEMAND has increased/decreased. (pick one)

(b) When a DEMAND curve shifts to the right, DEMAND has increased/decreased. (pick one)

(c) A shift in a DEMAND curve implies that there are now two DEMAND curves / is a new DEMAND curve to replace the old one. (pick one)

(a) decreased.

(b) increased.

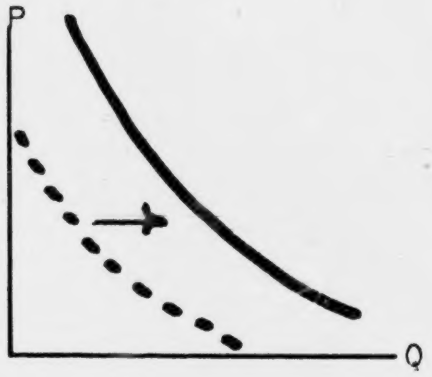
(c) There is a new curve to replace the old one.

FRAME 11

Imagine that the following situations are true. In each case, for the product named: (a) state whether demand will increase or decrease; (b) state which way the DEMAND curve for the product will shift; (c) identify the DEMAND condition that has caused the change.

Situation & Product	Effect on DEMAND	Direction curve will shift	DEMAND Condition Involved
(a) Advertisers have convinced women that brunettes have more fun. Product: Blond hair coloring.			
(b) Federal income tax is reduced for all. Product: All goods and services.			
(c) Restrictions on credit make it hard to borrow money. Product: Major appliances, such as stoves, freezers, etc.			
(d) Extra-low rates are announced for long-distance telephone calls after 6 p.m. Product: Telegrams.			

(a) decrease; left; change in taste,
(b) increase; right; income increases,
(c) decrease; left; cost of borrowing increases,
(d) decrease; left; price of substitute is lower.



Which of the following could cause the above shift in DEMAND?

(a) DEMAND for houses after interest rates on loans decline.

(b) DEMAND for all goods and services following a government prediction of a large increase in the number of jobless.

(c) DEMAND for **clothing** in a poverty area where a new government program provides jobs for all who need them.

(d) An announcement of a low-priced substitute for the product described by the curve.

(a) and (c).

The curve has shifted to the right, indicating an increase in DEMAND. If it costs less to borrow money to buy a house, it's reasonable to assume that DEMAND for houses will increase. Similarly, if jobs are provided in a poverty area, DEMAND for clothing is likely to increase.

The other two alternatives suggest that a decrease in DEMAND is likely. If people fear that they are about to lose their jobs, they will cut back on spending. A low-priced substitute is likely to decrease DEMAND for the original product.

CRITERION TEST

1. If a DEMAND curve moves from its original position, we know that there has been a change in:

   (check one)

   _____ (a) the quantity demanded;

   _____ (b) DEMAND conditions;

   _____ (c) price.

2. If the DEMAND curve moves to the right:

   (check ALL correct statements)

   _____ (a) DEMAND has increased;

   _____ (b) DEMAND has decreased;

   _____ (c) The price-quantity relationship has changed;

   _____ (d) DEMAND conditions have changed;

   _____ (e) quantity demanded will probably change.

3. Beside each of the following products is a change in DEMAND conditions. Indicate with a check mark what, if any, effect the changed condition will have on DEMAND for the product.

Product	Condition	Effect on DEMAND			
		Curve shifts right	Curve shifts left	No change	Can't Tell
(a) Gray pants for teenagers	"New look is for bright-color checks.				
(b) Bread	Start-up of new factory makes jobs for all in community.				
(c) Automobiles.	Start-up of new factory makes job for all in community				
(d) Cigars.	Cost of borrowing money goes down.				

ANSWERS TO CRITERION TEST

1. (b)

2. (a), (c), (d), (e).

3 (a) Curve shifts left.

  (b) **probably no change**

  (c) Curve shifts right.

  (d) Can't tell.

UNIT II
Lesson 4

Program 9
SUPPLY CONDITIONS

FRAME 1

Supply conditions are all those factors that affect the supply curve--that is, the quantity which will be sold at each price on any given day. Generally speaking, supply conditions are things that affect the cost of production.

The more it costs a manufacturer to produce an article, the more/less he will supply at any given price.
(pick one)

less.

FRAME 2

Conditions that increase production costs will tend to increase/decrease Supply.
(pick one)

decrease

FRAME 3

Just as Demand conditions affect the position of the Demand curve, Supply conditions affect the position of the Supply curve.

On which side of this Supply curve do you think the new curve will be if the cost of production goes up?

_____ (a) left

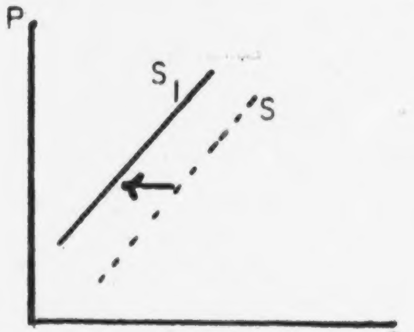
_____ (b) right

(FRAME 3 - continued)

(a) left

FRAME 4

The price of inputs is one example of a Supply condition.



Here you see the effect on a Supply curve when the cost of an input is increased.

The rise in cost created a new Supply curve to the left of the old one. A shift to the left means that the amount suppliers are willing to supply at any given price has been reduced.

Suppose that this is the Supply curve for fresh lettuce and that S_1 is the new position of the curve after an increase in the price of irrigation equipment (one of the inputs).

What is likely to happen to the Supply curve if water rates are reduced?

_____ (a) The new curve probably will be left of S_1.

_____ (b) The curve probably will stay where it is now, at S_1.

_____ (c) The new curve probably will be right of S_1.

(c) The price of an input has changed, so Supply has changed again. The new curve probably will be right of S_1.

FRAME 5

In real life, the Supply conditions that affect Market Supply are changing constantly. What assumption must we make about Supply conditions, however, in looking at a particular Supply curve?

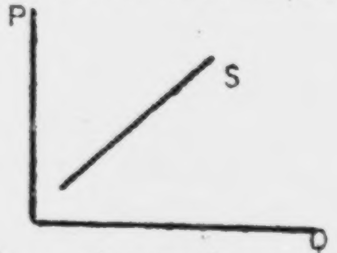
(in your own words)
____
____
____

(FRAME 5 - continued)

The Supply curve assumes that all Supply conditions are known and fixed. They are "frozen" for the period being considered.

FRAME 6

Here we have a Supply curve which assumes certain Supply conditions:



Suppose there is a change in one of the Supply conditions. Will this same curve reflect the change?

_____ (a) Yes

_____ (b) No

No.

FRAME 7

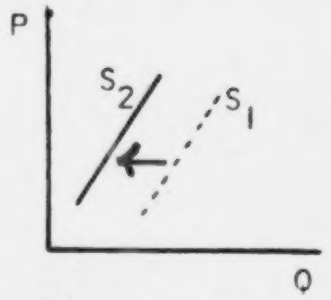
What do we have to do to show a change in Supply resulting from a change in Supply conditions?

____

Draw a new curve.

FRAME 8

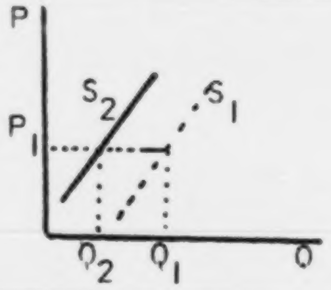
Here is an example of a change in Supply. (The dotted line represents the old curve.)



The quantity supplied at any given price has increased/decreased.
(pick one)

decreased

At price P_1, the quantity supplied has decreased from Q_1 to Q_2.



FRAME 9

A shift in the Supply curve such as the one shown in the last frame could/could not be caused by a wage increase.
(pick one)

could

FRAME 10

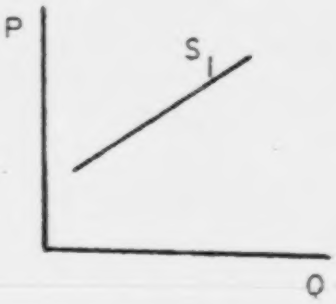
When the cost of an input such as materials goes down, what happens to Supply? It increases/decreases.
(pick one)

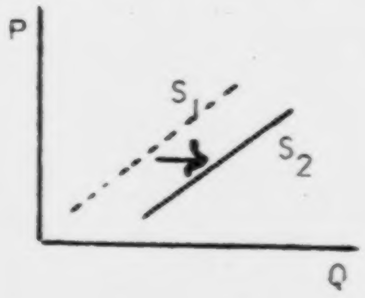
(FRAME 10 - continued)

Supply increases.

FRAME 11

Draw a curve, S_2, showing increased Supply

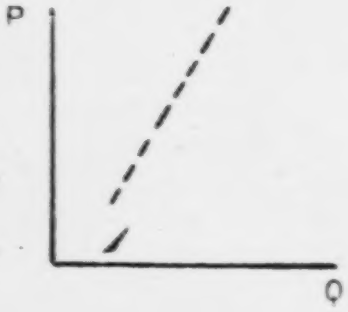




FRAME 12

(a) A craftsman making gold jewelry finds that the price of gold increases by 50 per cent.

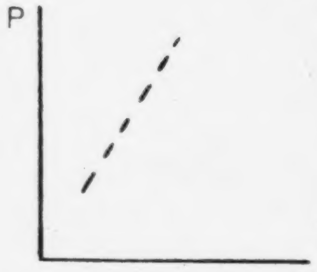
Draw in a new Supply curve for his product.



(FRAME 12 - continued)

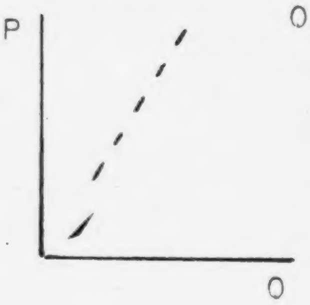
(b) A factory starts business renting land on the edge of town, but eventually--because of the town's growth--the factory is in the center of the high-rent district.

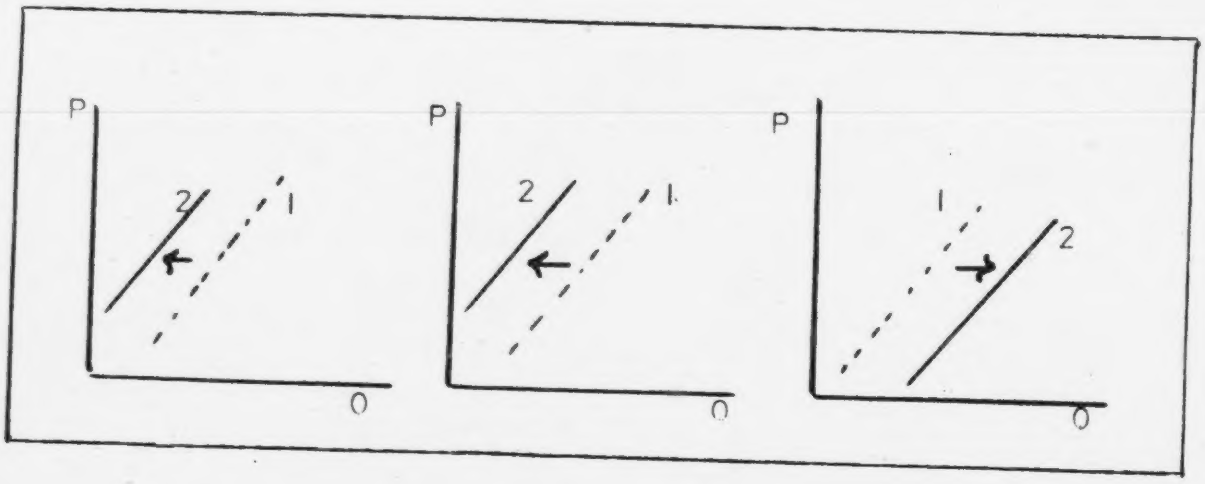
Draw in a new Supply curve for this factory's output.



(c) A new sanding machine which costs the same as the old machine reduces sanding time to one-half and requires less labor in the production of skateboards.

Draw in a new Supply curve for skateboards on this graph.





FRAME 13

The price of inputs, as mentioned, is one kind of Supply condition. Other examples of conditions that bring about a change in Supply are:

the quality of the output

and

production methods

(FRAME 13 - continued)

Suppose that all of the manufacturers in the candle-holder market decided that instead of supplying products hand-carved out of rare wood by skilled craftsmen, they would supply cheap metal candlesticks stamped out by a machine. Which of the following Supply conditions would be changed?

_____ (a) Price of inputs.

_____ (b) Quality of output.

_____ (c) Production methods.

All three: the price of inputs, the quality of the output and production methods. In real life, conditions like these will affect the quantity supplied at any particular price.

FRAME 14

In the example above, what assumption do we make about Supply conditions in drawing the supply curve?

____

____

Conditions are known and fixed. We must make this assumption so that we can, in a sense, "freeze" the market (at any one point in time) long enough to take a good look at it.

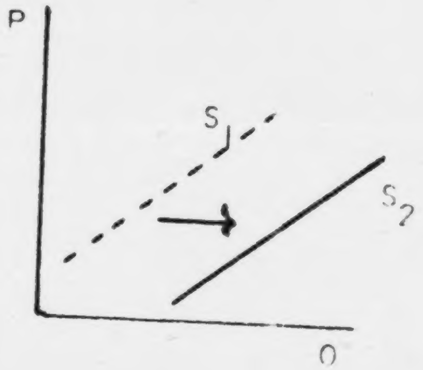
FRAME 15

Something has happened to the price of inputs for this market--what?

____

____

____



(FRAME 15 - continued)

The Price of inputs has decreased, so the product costs less to produce and suppliers can offer more at any given price.

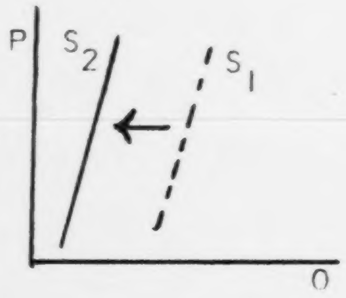
FRAME 16

Quality of output is one of the Supply conditions mentioned. It affects the Supply curve because quality is related to price--improving quality usually calls for more time in production, more skill, better materials, and so on.

In this market, the quality of a product offered has changed considerably. Judging by the shift in the curve, quality is:

_____(a) probably improved

_____(b) probably worse



(a) Quality has been improved. Since it usually costs more to offer a better service, it is no longer possible to provide the same amount of service at any given price.

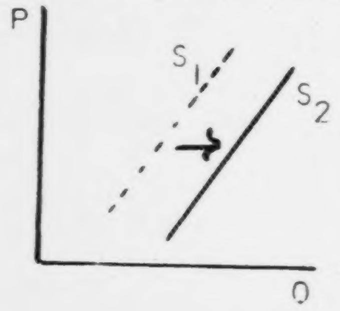
FRAME 17

We have discussed three of the conditions which affect production costs and thus affect Supply. Indicate which change in each condition would account for the shift in this Market Supply curve.

(a) Price of inputs: decreased/increased.

(b) Quality of output: lower/higher.

(c) Production methods: worse/better.



(FRAME 17 - continued)

(a) Price of inputs has decreased; (b) Quality of output is lower; (c) Production methods have been made better.

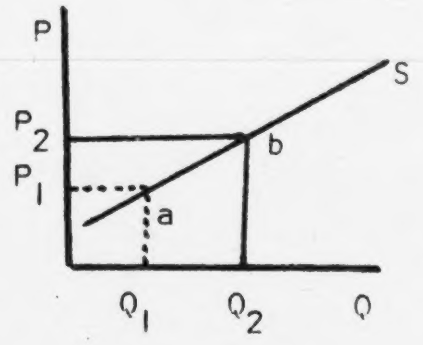
FRAME 18

Experience tells us that when these ideas about Supply are discussed in class or read about, confusion can creep in unless you take care to keep some meanings straight.

What you must remember is that when we talk about Supply, we mean the price-quantity relationship described in the whole curve.

Do not confuse Supply with Quantity Supplied which is simply one of the variables, namely the amount made available at any specified price.

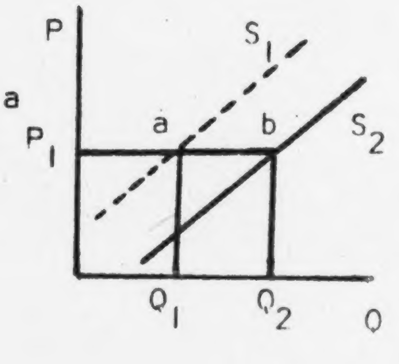
The change from point "a" to point "b" is/is not a change in Supply.
(pick one)



It is NOT a change in Supply (the price-quantity relationship). This is a change along the Supply curve so that each new quantity is accompanied by a new price.

FRAME 19

The change from point "a" to point "b" is/is not a change in Supply.
(pick one)



(FRAME 19 - continued)

This is a change in Supply. Quantity supplied has increased from Q_1, to Q_2, but the price P_1, has not changed. (The whole curve has shifted, due to a change in Supply conditions.)

FRAME 20

Visualize a Supply curve for can openers. Quantity supplied ranges from 50,000 at 30 cents to 250,000 at 75 cents for the same product.

Now suppose that conditions make it less expensive to manufacture the can openers so that firms can supply a larger quantity at each price. At 30 cents for example, they are now willing to supply 100,000 instead of 50,000.

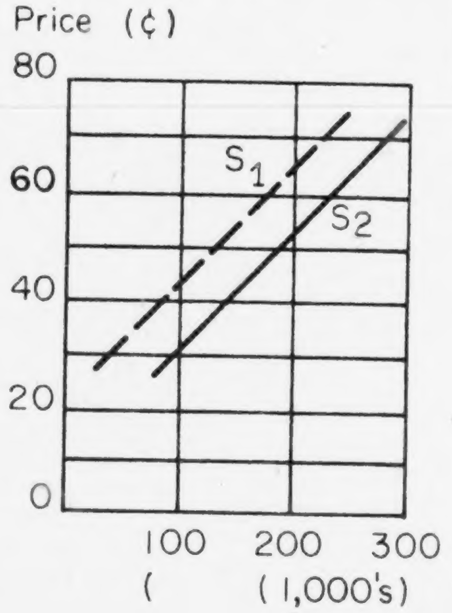
How do economists refer to this situation?

As a change in:

_____ (a) quantity supplied

_____ (b) Supply

(b) A change in Supply. Conditons have changed so that there is a new Supply curve--a new price-quantity relationship.



To summarize:

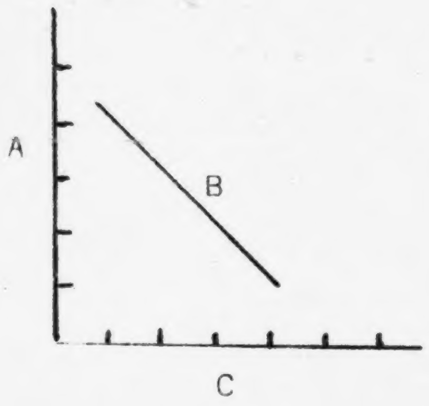
Supply conditions such as the price of inputs, the quality of the product, and production methods, all affect the cost of production. Cost, in turn, affects the Supply price-quantity relationship of the market on that day.

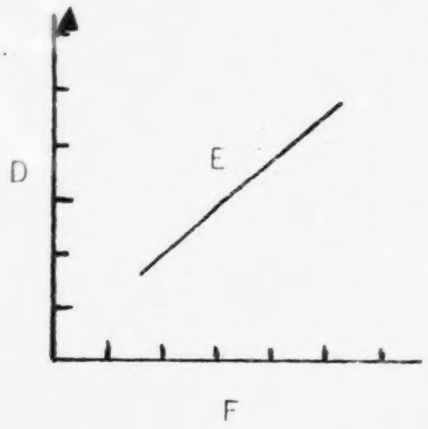
If the production costs increase, Supply will decrease and there will be a new Supply curve to the left of the old one.

If production costs decrease, Supply will increase and there will be a new Supply curve to the right of the old one.

When we talk about Supply (just as when we talk about Demand), we mean the price-quantity relationship described by the whole curve. Quantity supplied (or demanded) is simply one of the variables, namely the amount made available at any specified price.

CRITERION TEST - Part I



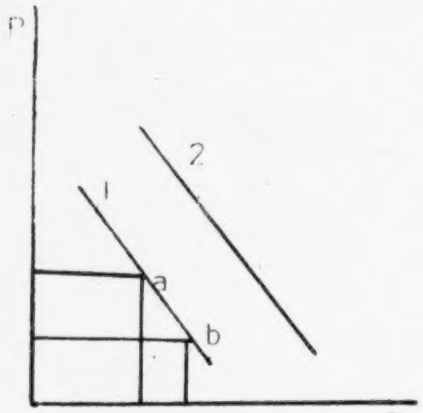


From the diagrams above, select the letters that match these descriptions:

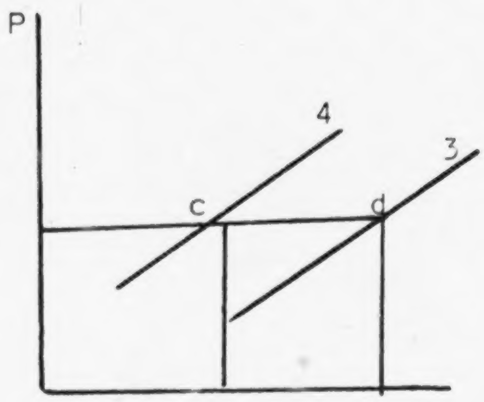
LETTERS

1. Supply curve ________________
2. Demand curve ________________
3. Scale to measure quantity supplied ________________
4. Scale to measure quantity demanded ________________
5. **Scale to measure price** ________________
6. Price-quantity relationship ________________
7. Negative slope ________________
8. Positive slope ________________

CRITERION TEST - Part II



Graph A



Graph B

1. Which of the following shows an increase in Demand (check all correct answers):

_____ (a) Change from point a to b in Graph A.

_____ (b) Shift from cruve I to curve 2 in Graph A.

_____ (c) Shift from curve 3 to curve 4 in Graph B.

_____ (d) Change from point c to point d in Graph B.

2. These curves all describe:

____

3. In Graph A, what causes the shift from curve I to curve 2?

____

4. In Graph B, what causes the shift from curve 3 to curve 4?

____

5. In which Graph do production costs affect quantity?__________

6. Using Graph A and B, describe the parts of each diagram which show:

(a) Demand__________

(b) Supply__________

(c) Measurement of quantity demanded__________

(d) Measurement of quantity supplied__________

(e) Change in Demand conditions__________

(f) Change in Supply conditions__________

CRITERION TEST - Part III

1. Check the factors that are Demand conditions and those that are supply conditions. (If you think the item affects both, check both)

	Supply Conditions	Demand Conditions
(a) Price of inputs or other costs of using inputs.		
(b) Tastes and preferences.		
(c) Cost of borrowing money.		
(d) Buyers' expectations about future income.		
(e) The quality of the product or service.		
(f) Buyers' current income.		
(g) Price and quality of substitutes		

2. Study each of the conditions below. Some are Supply conditions that affect production costs and thus Supply. Identify them and tell whether the Supply at any given price will increase or decrease. Explain why. Do the same thing for any Demand conditions you find.

	Supply Conditions	Demand Conditions
	(check one)	
(a) Apartment house owners have raised their rents to occupants. ______________________________ ______________________________		
(b) The cost of printing gum wrappers has gone down. ______________________________ ______________________________		
(c) A nursery growing camelia bushes decides to sell year-old plants instead of three-month-old ones. ______________________________ ______________________________		

(CRITERION TEST - Part III - continued)

	Supply Conditions	Demand Conditions
(d) Banks lower interst rates for home improvements. ________________________ ________________________		
(e) A surfboard manufacturer moves his operation from an inland city to one on the seacoast. ________________________ ________________________		

3. On a given day, if the price of orange juice is 25 cents a can, people buy more cans than they do when the price is 30 cents a can. Does this situation imply an increase in Demand or in quantity demanded?

____

ANSWERS TO CRITERION TEST

Part I

1. E.
2. B.
3. F.
4. C.
5. A, D.
6. B, E.
7. B.
8. E.

Part II

1. (b)

2. price quantity relationship.

3. A change in Demand conditions

4. A change in Supply conditions

5. Graph B.

6. (a) Curves I and 2, Graph A.
   (b) Curves 3 and 4, Graph B.
   (c) Horizontal axis Q, Graph A.
   (d) Horizontal axis Q, Graph B.
   (e) Shift from curve I to curve 2, Graph A. (or vice versa)
   (f) Shift from curve 3 to curve 4, Graph B. (or vice versa)

Part III

1. (a) Supply
   (b) Demand
   (c) Demand or Supply
   (d) Demand
   (e) Supply or Demand
   (f) Demand
   (g) Demand

2. (a) **neither; a change in price means a different point on the same demand curve.**

   (b) Supply condition: Supply will increase; with price of materials down, it's possible to produce more than could be supplied at the original cost.

   (c) Supply condition; Supply will decrease; it costs more to keep the plants for a year.

(ANSWERS TO CRITERION TEST - continued)

(d) Demand condition; Demand will increase; with lower interest rates it costs less to borrow money so people have more to spend. **Supply may also change.**

(e) Supply condition; Supply will increase; cutting down on shipping costs will decrease cost of production.

3. Quantity demanded.

(DRAFT COPY--FOR RESTRICTED USE ONLY)

UNIT II

Lesson 4
Program 10
THE LAW OF SUPPLY & DEMAND

Introduction

Piano students learning to play a difficult passage often practice first with one hand and then with the other before combining the parts of the music for left and right hands. We've done much the same thing in describing Supply and Demand to you. Now it's time to bring all of the parts together.

In our model of the market, we have tried to make things easier for you by assuming that either the demand conditions or the supply conditions were fixed. That leaves us with two important questions still to be answered: What happens to the equilibrium price when the conditions of both supply and demand are free to change, as they usually are in real life? And what happens to the quantities sold as conditions change?

We can answer those questions by studying the Law of Supply and Demand.

FRAME 1

Suppose buffalo hide is used to make a tough leather bag. Manufacturers of the bag have a high material cost because buffalos are mighty scarce these days. The bags are rare and costly.

Suddenly buffalos reappear; new herds are discovered, and we end up with more buffalos than we know what to do with. Here is a changed condition that leads to an increase in supply of buffalo-hide bags. What happens to the Supply curve?

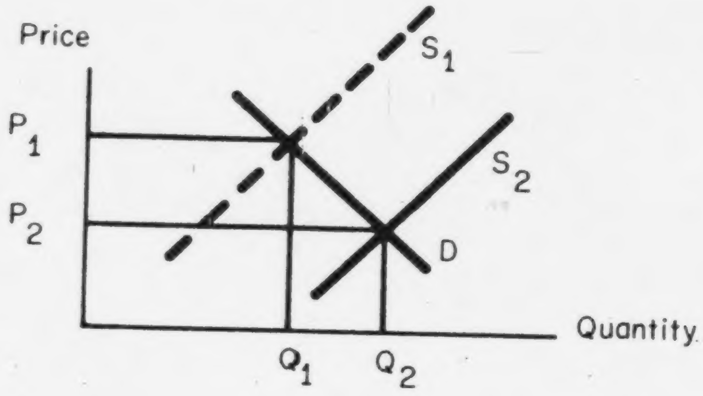
_____ (a) It moves to the right.

_____ (b) It moves to the left.

(a) It moves to the right

The number available at any price increases.

For FRAMES 2 to 5, please refer to this graph:



FRAME 2

On this graph, S_2 represents the increased supply due to changed conditions. When the Supply curve moves to the right, as in this case, what happens to the equilibrium price?

_____ (a) It rises.

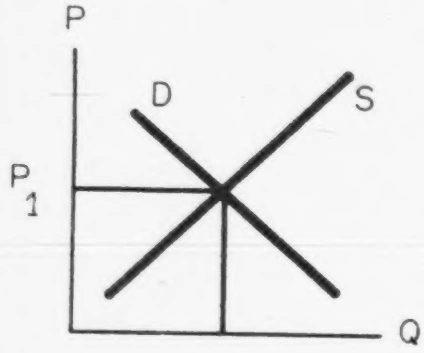
_____ (b) It falls.

_____ (c) It's anybody's guess--I don't know.

(a) It Falls.

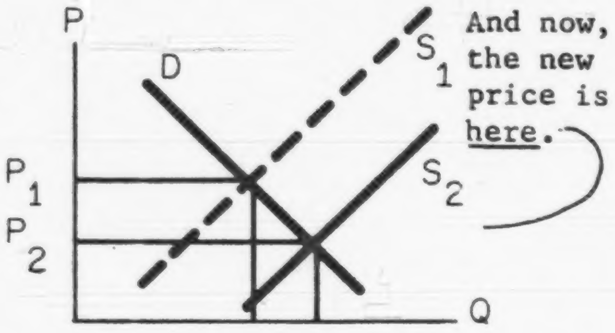
If you're still at the guesswork stage, read Frame 3. If you see the point (the new equilibrium point, that is, jump ahead to FRAME 4.

FRAME 3



At first, equilibrium price is here.

Then we increase Supply.



And now, the new price is here.

Where is P_2 in relation to P_1 ?

_____ (a) It is higher.

_____ (b) It is lower.

(b) It is Lower.

The equilibrium price is found at the point where the Demand and Supply curves intersect. Price falls when the Supply curve moves to the right and demand conditions are unchanged.

FRAME 4

Say that one year, hoards of hungry insects invade the Corn Belt and devour the corn crop, yet people still demand as much corn as ever.

(a) What happens to the corn supply?

____

(b) In what direction will the Supply curve move?

____

(c) The equilibrium price will rise/fall.
(pick one)

(a) It will decrease.

(b) The Supply curve moves to the left.

(c) The equilibrium price will rise.

FRAME 5

If supply conditions change so that the Supply curve shifts to the left, and if demand conditions remain unchanged,

(a) the equilibrium price will ______________.

(b) the quantity sold will ______________.

(a) rise

(b) decrease (the change considered here is from S_2 to S_1.)

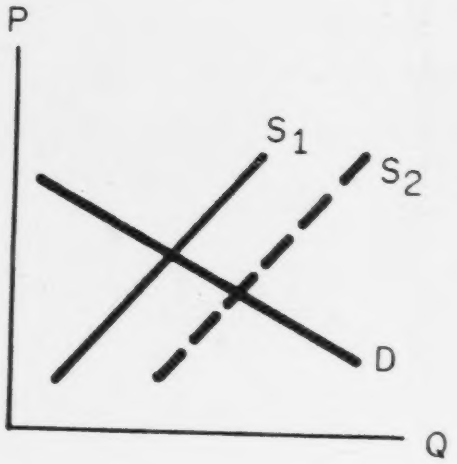
FRAME 6

The Law of Supply and Demand describes how changes in Supply and Demand affect price. You should be able to complete the first part of the law:

When demand conditions do not change

(a) If supply decreased, price will __________ and the quantity sold will__________.

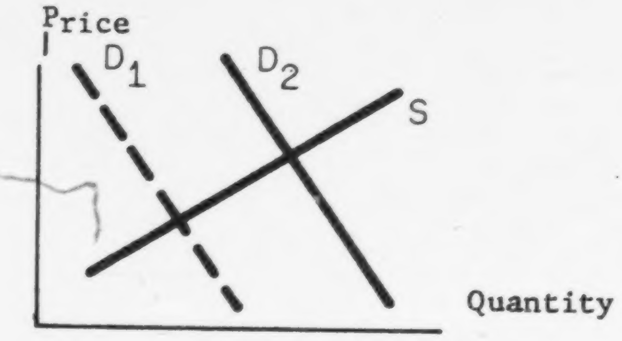
(b) If supply increases, price will __________ and the quantity sold will __________.



(a) price will rise; quantity sold will decrease.

(b) price will fall; quantity sold will increase.

For FRAMES 7 to 9, please refer to this graph:



FRAME 7

We have looked at what happens when Demand is fixed and supply conditions change. Now let's consider the opposite case: when Supply does not change but demand conditions do. For example, suppose that an out-of-print book becomes a collector's item. There are just so many copies available, but more and more people want to own them.

In the graph above, the curve that shows the greater demand for books is D_1/D_2.
(pick one)

D_2

FRAME 8

As demand increased, the Demand curve moves to the _________.

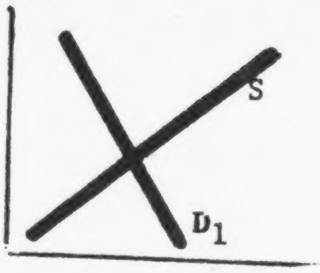
right

FRAME 9

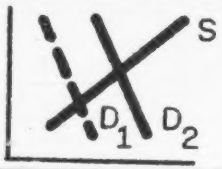
If supply conditions do not change, as the Demand curve moves to the right, the equilibrium price _________ and the quantity sold _________.

Equilibrium prices rises; quantity sold increases.

FRAME 10



There is a strong probability that a trucking strike will cause a shortage of frozen foods. Draw in a new Demand curve to show what happens here if supply conditions are fixed.



The Demand curve will probably move to the right as people rush to stock their freezers.

FRAME 11

In this case, what is behind the price increase:

_____ (a) Actual change in demand conditions.

_____ (b) Actual change in supply conditions.

(a) Actual change in demand conditions

FRAME 12

The second half of the Law of Supply and Demand summarizes the effect of a change in Demand on prices and quantity sold.

When supply conditions do not change,

(a) If Demand increases, price will ________ and the quantity sold will ________.

(b) If Demand decreases, price will ________ and the quantity sold will ________.

(a) price will rise; quantity sold will decrease.

(b) price will fall; quantity sold will decrease.

FRAME 13

Now let's get to the final step by first summarizing the Law of Supply and Demand:

A. Demand conditions fixed	B. Supply conditions fixed
If Supply increases:	If Demand increases:
price falls;	price rises;
quantity sold increases.	quantity sold increases.
If Supply decreases:	If Demand decreases:
price rises;	price falls;
quantity sold decreases.	quantity sold decreases.

(continued on the next page)

FRAME 13 (continued)

Note: Study the summary carefully.

(1) Describe the similarities between A and B. (If you need a hint, see below).

____

____

(2) Describe the differences:

____

____

____

HINT

When either Supply or Demand changes, what happens to quantity? What happens to price?

(Your own words)

(1) The change in quantity sold is always in the same direction as a change in either Supply or Demand.

(2) The change in price is in the opposite direction from a change in Supply; it is in the same direction as a change in Demand.

(DON'T GO AHEAD UNTIL YOU SEE THESE DISTINCTIONS CLEARLY.)

FRAME 14

The foregoing shows that if we change only one side of the market at a time, we can/cannot (pick one) forecast the direction in which price and quantity sold will change.

can

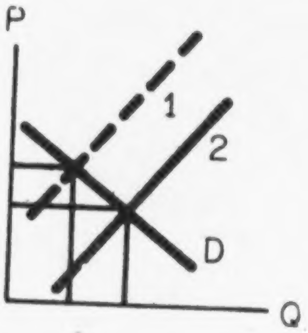
FRAME 15

In this case, supply conditions change; demand conditions don't change.

What is the resulting change in price and quantity sold?

(a) **Price** _________.

(b) Quantity sold_________.



(a) Price falls.

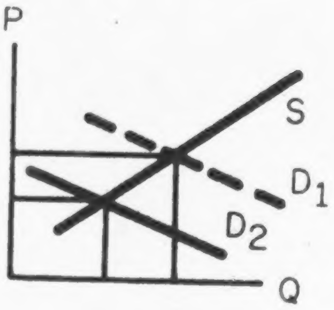
(b) Quantity sold increases.

FRAME 16

Here demand conditions change from D_1 to D_2; supply conditions don't. What happens to price and quantity sold?

(a) Price_________.

(b) Quantity sold_________.



(a) Price falls.

(b) Quantity sold decreases.

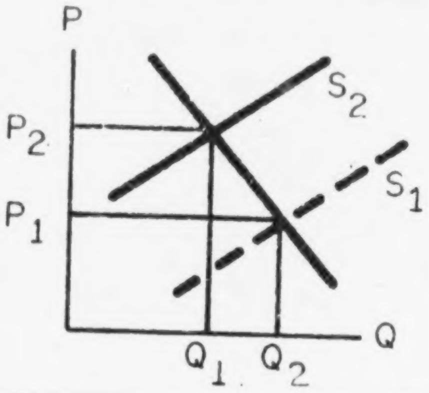
FRAME 17

If production costs increase for a product and people continue to want as much of it as ever, what can you say about price and quantity sold?

____

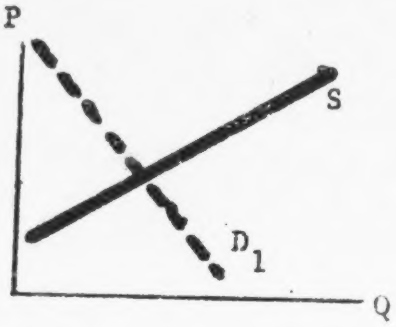
____

Price rises; quantity sold decreases.



FRAME 18

(a) Draw in a new Demand curve for this air conditioner market; the temperature has been holding at 100° for two weeks; supply conditions are unchanged.



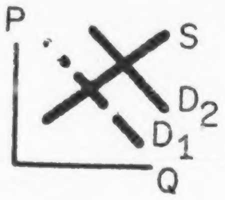
(b) What will happen to the price of air conditioners?

____

(c) What about quantity sold?

____

(a) Your graph should look something like this:



(b) Price will go up.

(c) Quantity sold will go up, too.

FRAME 19

Suppose that we are talking about a commodity such as color TV sets for which there is an expanding market. Assume that both Demand and Supply are likely to increase at the same time.

Answer the following question by referring to the summary of the Law of Supply and Demand on the next page.

(continued on the next page)

FRAME 19 (continued)

When both Demand and Supply increase, what happens to the quantity sold?

Increases/Decreases/Can't Tell
(pick one)

____

LAW OF SUPPLY AND DEMAND

A. Demand conditions fixed

If Supply increases:

price falls;

quantity sold increases.

If Supply decreases:

price rises;

quantity sold decreases.

B. Supply conditions fixed

If Demand increases:

price rises;

quantity sold increases.

If Demand decreases:

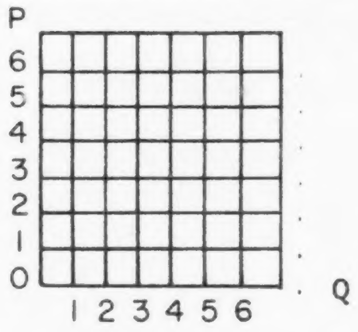
price falls;

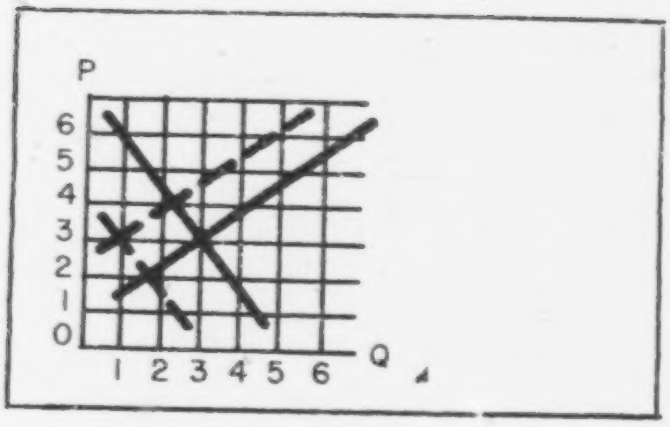
quantity sold decreases.

Quantity sold increases. (A change in quantity sold always will be in the same direction as a change in either Supply or Demand.)

FRAME 20

To prove that a change in quantity sold always will be in the same direction as a change in either Supply or Demand, draw a graph showing an increase in both Supply and Demand.





FRAME 21

When both Demand and Supply increase, what happens to price?

Increases/decreases/can't tell
(pick one)

(If you need help, refer to the summary of the Law of Supply and Demand, FRAME 19.)

can't tell

FRAME 22

(a) An increase in Supply causes price to

______________.

(b) An increase in Demand causes price to

______________.

(a) fall

(b) rise

FRAME 23

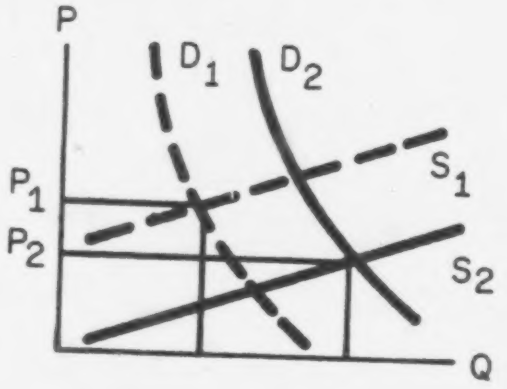
So, when Supply and Demand both increase, price could rise or fall or stay the same, depending on how much one change offsets the other. Before you can tell anything more about price, you need to know how far the Supply and Demand curves have shifted.

(continued on the next page)

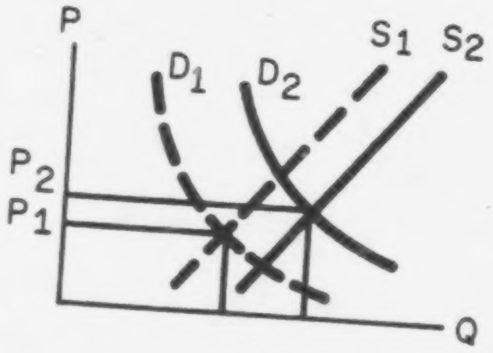
FRAME 23 (continued)

(a) For example, in this graph, price increase/decreases/stays the same (pick one)

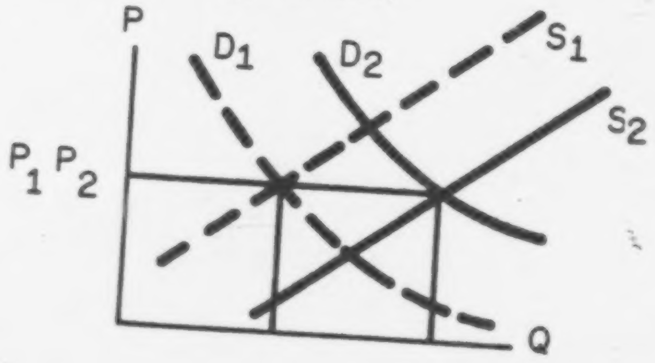
NOTE: It doesn't make any difference whether the lines are straight or curved.



(b) In this graph, price increases/decreases/ stays the same (pick one)



(c) How about this graph? Price increases/decreases/stays the same (pick one)



(a) decreases; (b) increases; (c) stays the same

Unless you know the quantities involved, you cannot predict what will happen to price when both demand and supply conditions change. (Look at the Law of Supply and Demand again; you can see that if you don't know the quantities sold, price is anybody's guess) (The Law is repeated on the next page.)

LAW OF SUPPLY AND DEMAND

A. Demand conditions fixed

If Supply increases:

price falls;

quantity sold increases.

If Supply decreases:

price rises;

quantity sold decreases.

B. Supply conditions fixed

If Demand increases:

price rises;

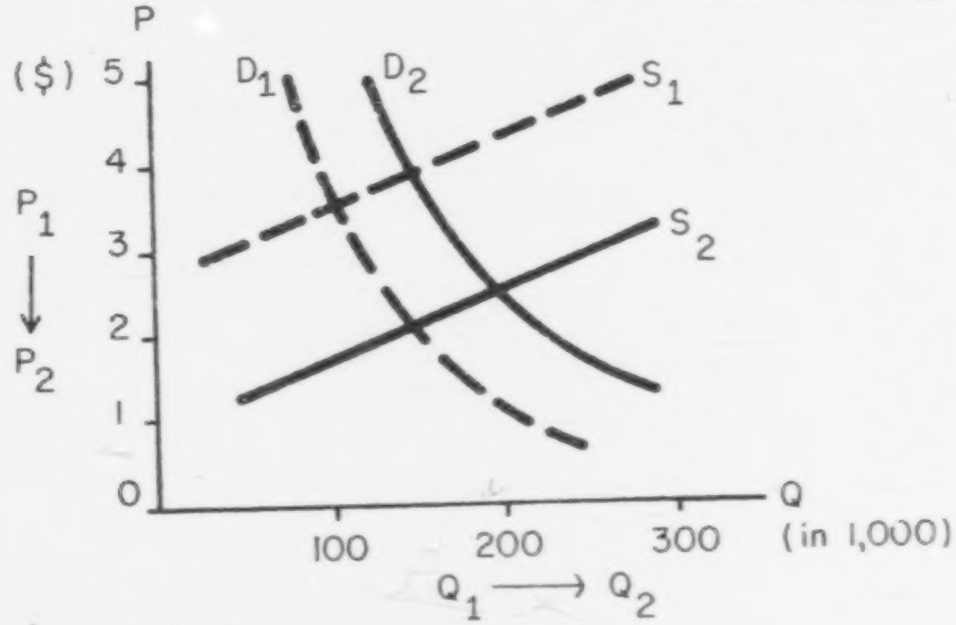
quantity sold increases.

If Demand decreases:

price falls;

quantity sold decreases.

FRAME 24



This graph shows a change in Demand from D_1 to D_2 and a change in Supply from S_1 to S_2.

(a) Has Demand increased or decreased?

____

(b) Has Supply increased or decreased?

____

(c) How much and in which direction has the equilibrium price changed?

____

____

(d) At the equilibrium price, how much and in which direction does quantity change?

____

____

(a) Demand increases.

(b) Supply increases.

(c) Price falls from \$3.50 to \$2.50.

(d) Quantity increases from 100,000 to 200,000.

FRAME 25

When both Demand and Supply increase, as they do above, do we need a table or graph before we can say in which direction the quantity sold will change?

_____ (a) Yes

_____ (b) No

(b) No

An increase in Demand and/or Supply is accompanied by an increase in quantity sold. The same consistency occurs when demand and/or supply decrease: quantity sold decreases.

FRAME 26

(To begin simplifying, ↑ means "increase" or "rise," ↓ means "decrease" or "drop," – (a hyphen) means "fixed" or "no change", and ? means "unknown" or "can't tell.")

(a) Suppose Demand increases (↑) while the Supply of canned peaches remains unchanged (–). The direction in which quantity sold will change is:

↑/↓/–/?
(pick one)

(b) The direction in which price will change is:

↑/↓/–/?
(pick one)

FRAME 27

(a) Demand for hula-hoops decreases (↓) while the Supply remains unchanged (—). The direction in which quantity sold will change is:

↑/↓/—/?
(pick one)

(b) The direction in which price will change is:

↑/↓/—/?
(pick one)

(a) (decrease)
(b) (decrease)

FRAME 28

(a) Suppose Demand increases (↑) and Supply increases (↑) for typewriters. The direction in which quantity sold will change is:

↑/↓/—/?
(pick one)

(b) The direction in which price will change is:

↑/↓/—/?
(pick one)

(a) (increase)
(b) (can't tell)

FRAME 29

(a) If the Demand for cellophane tape decreases (↓) and the Supply decreases (↓) as well, in which direction will quantity sold change?

↑/↓/—/?
(pick one)

(continued on the next page)

FRAME 29 (continued)

(b) The direction in which price will change is:

↑/↓/—/?
(pick one)

(a) ↓ (decrease)
(b) ? (can't tell)

FRAME 30

(a) If Demand for peanut butter increases (↑) but Supply decreases (↓), in which direction will quantity sold change?

↑/↓/—/?
(pick one)

(b) In which direction will price change?

↑/↓/—/?
(pick one)

(a) ? (can't tell)
(b) ↑ (increase)

FRAME 31

(a) If Demand for haircuts decreases (↓) but the Supply of barber shops increases (↑) what will happen to the number of haircuts barbers give? In which direction will quantity sold change?

↑/↓/—/?
(pick one)

(b) Will it cost more or less to get a haircut? In which direction will price change?

↑/↓/—/?
(pick one)

(a) ? (can't tell)

(b) ↓ (decrease)

RAME 32

Is this statement true or false?

When both Demand and Supply curves shift, we can predict the direction of change for price for some cases and the direction of change for quantity for the others, but we can never predict both.

_____ (a) True

_____ (b) False

(a) True

AME 33

Suppose that a strike holds up manufacture of color TV sets so that we have a market in which demand is increasing while supply is decreasing. Using the Law of Supply and Demand, can we say:

(a) in which direction price will change? __________

(b) in which direction quantity sold will change? __________

(a) Yes.

When demand increases, price increases. When supply decreases, price increases. The equilibrium price is going to rise.

(b) No.

When demand increases, quantity sold increases. When supply decreases, quantity sold decreases. Without more information, we cannot tell how much one will offset the other.

UNIT II
Lesson No. 4

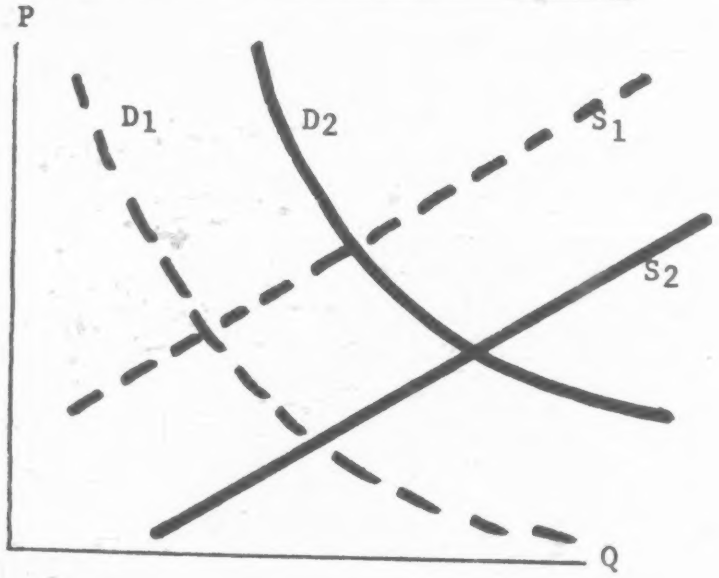
Program
CRITERION TEST

Some of the sections to follow will be much easier for you if you have mastered this one. Once you can predict automatically what changes in Supply and Demand do to price and quantity sold, you'll have a head start in understanding many of the problems economists face.

1. Complete the blanks in the table below, indicating whether price rises or falls, whether quantity increases or decreases. (Use the symbols or write out your answers, whichever you like.)

   Refer to the graph if you need help or draw Demand and Supply curves of your own to figure out the answers.

Demand & Supply conditions	Change in	
	Price	Quantity
(a) D ↑ S –		
(b) D ↓ S –		
(c) D – S ↑		
(d) D – S ↓		
(e) D ↑ S ↑		
(f) D ↓ S ↑		
(g) D ↑ S ↓		
(h) D ↓ S ↓		



CRITERION TEST (continued)

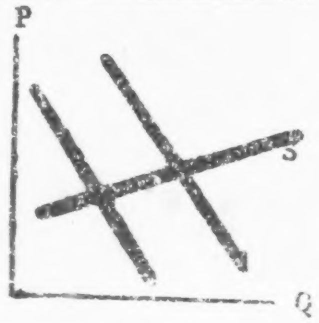
2. Consider the conditions present and answer these questions:

(a) Plastic straws have become more popular than paper straws. This is a model of the market for paper straws. Label the Demand curves D_1 and D_2 to indicate the shift in Demand. State what happens to price and quantity sold if Supply conditions are fixed.

Price: ________________

Quantity Sold: ________________

PAPER STRAW MARKET

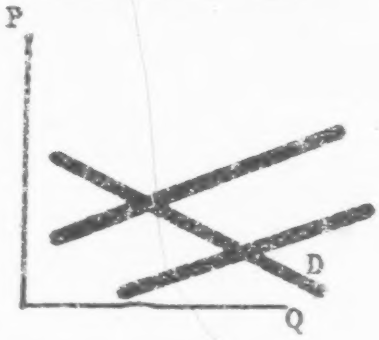


(b) Manufacturers of mousetraps finally find a cheaper way to make them better. This is a model of the mousetrap market on Chirstmas Eve. Label the Supply curves S_1 and S_2 to indicate a shift in Supply. State what happens to price and quantity sold if Demand for mousetraps is fixed.

Price: ________________

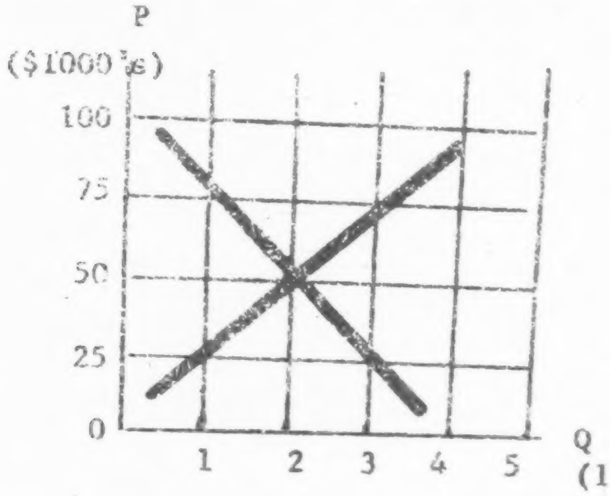
Quantity Sold: ________________

MOUSETRAP MARKET



3. Income has increased and the cost of making pizza pie has decreased. Here are Supply and Demand curves for franchised pizza parlors.

(Use the diagram to help you work out the answers.)



(a) What will happen to Supply?

____

(b) What will happen to Demand?

____

(c) Can you tell how price will change?

____

(d) Can you tell how quantity sold will change?

____

CRITERION TEST (continued)

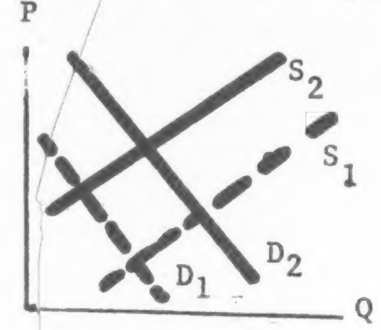
4. Study this Supply and Demand market.

(a) What has happened to Supply? ____________

(b) What has happened to Demand? ____________

(c) As a result, what will happen to price? ____________

(d) Can you tell what will happen to quantity sold? ____________



5. This one is a bonus question. Try it. Complete all the blanks.

	Price	Quantity
(a) D S ↑		?
(b) D S	?	↓
(c) D S	?	↑
(d) D ↑ S		?

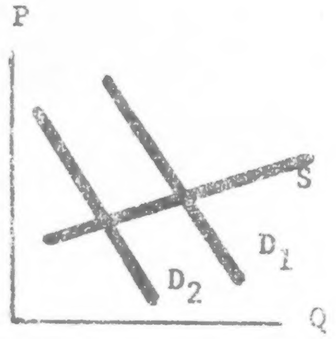
UNIT II
Lesson No. 4

ANSWERS TO CRITERION TEST

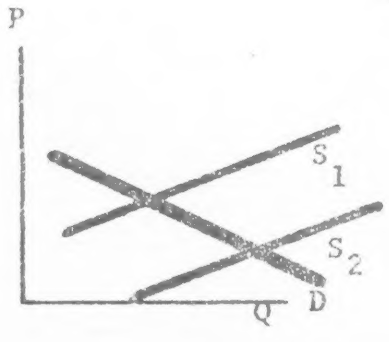
1.

Demand & Supply conditions	Change in	
	Price	Quantity
(a) D ↑ S —	↑	↓
(b) D ↓ S —	↓	↓
(c) D — S ↑	↓	↑
(d) D — S ↓	↑	↓
(e) D ↑ S ↑	?	↑
(f) D ↓ S ↑	↓	?
(g) D ↑ S ↓	↑	?
(h) D ↓ S ↓	?	↓

2.



Price falls; quantity sold decreases.



Price falls; quantity sold increases.

ANSWERS TO CRITERION TEST (continued)

3. (a) Supply will increase.

   (b) Demand will increase.

   (c) You can't tell what will happen to price.

   (d) Quantity sold will increase.

4. (a) Supply has decreased.

   (b) Demand has increased.

   (c) Price will rise.

   (d) No you can't tell what will happen to quantity sold.

5. (BONUS)

	Price
(a) D↓ S	↓
(b) D↓ S↓	
(c) D↑ S↑	
(d) D S↓	↑

LESSON 4

UNIT II
Exercise 3

SUMMARY QUESTIONS: DEMAND AND SUPPLY CONDITIONS, THE LAW OF SUPPLY AND DEMAND

1. The following table is a model of the demand for and supply of steak for a particular week.

I PRICE OF STEAK	II MARKET DEMAND (LBS / DAY)	III MARKET SUPPLY (LBS / DAY)	IV MARKET DEMAND SHOWING INCREASE I DEMAND
1.00	5000	3000	
1.20	4500	3500	
1.40	4000	4000	
1.60	3500	4400	
1.80	3000	4700	

a. Assume demand increases. Fill in column IV with numbers which show this increase in demand.

b. What will be the new equilibrium price and quantity sold?

PRICE ______________

QUANTITY ______________

c. Give three possible reasons for this increase in demand.

d. Quote the part of the law of supply and demand which predicts this change.

2. List the major demand conditions:____________________

3. List the major supply conditions: ____________________

4. Define demand, quantity demanded and change in demand. Illustrate the difference between these terms using demand curve diagrams:

UNIT II
EXERCISE 4

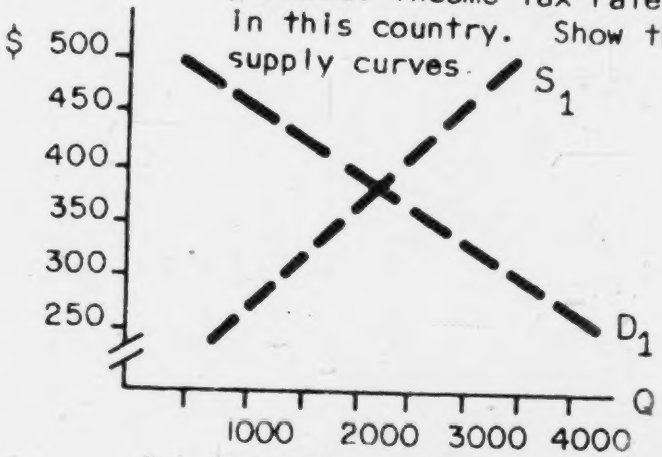
LESSON 4

PRACTICAL APPLICATIONS OF SUPPLY AND DEMAND CURVE ANALYSIS

Now that you have mastered the law of supply and demand, we'll put the analysis to work on some practical problems.

These exercises all involve changes in demand and/or supply conditions in a market or a group of markets. For each example show the change (or changes) in demand and/or supply conditions by drawing in the shift in the demand and/or supply curve. Then state the effect on price and quantity sold. The reason we say demand an/or supply is that, in some cases, one change in conditions affects both demand and supply.

1. This diagram shows clothing market demand and supply. Pretend that personal income tax rates are reduced by about 10% for most people in this country. Show the effect by drawing the new demand and/or supply curves.

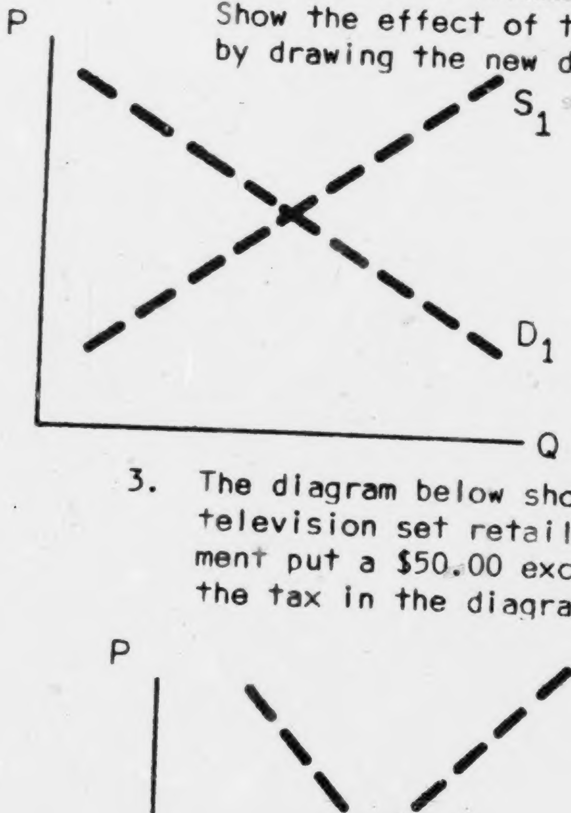


What happens to price and quantity sold?

a. Price increases/decreases/can't tell

b. Quantity increases/decreases/can't tell

2. This diagram shows the market for American made bicycles. Assume that the Federal Government removes the tariff on British and Italian bicycles. Show the effect of this tariff cut on the market for American made bicycles by drawing the new demand and/or supply curves.

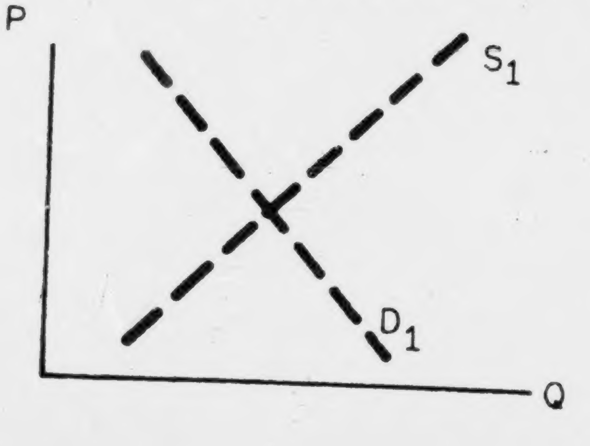


What happens to price and quantity sold?

a. Price increases/decreases/can't tell

b. Quantity increases/decreases/can't tell

3. The diagram below shows the demand and supply curves for the colored television set retail market. What would happen if the Federal Government put a $50.00 excise tax on television sets? Show the effect of the tax in the diagram by drawing the new demand and/or supply curves.



What happens to price and quantity sold?

a. Price increases/decreases/can't tell

b. Quantity sold increases/decreases

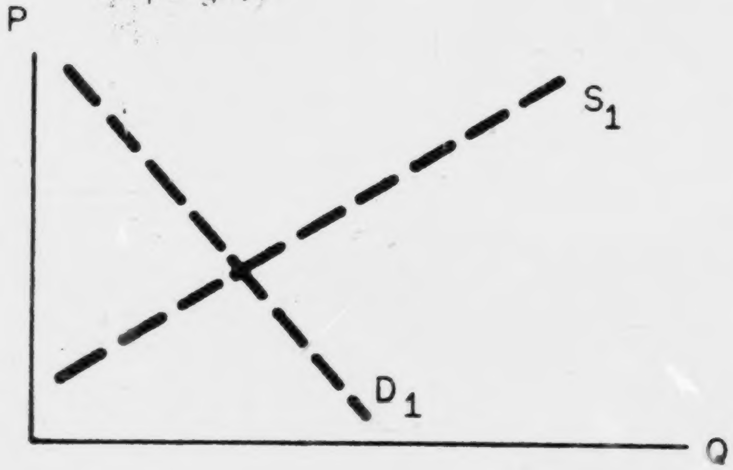
c. In this case, you can predict the amount of the price change, because you can figure out how far to shift the curve. How much does price change?

_____ a. by $50

_____ b. by less than $50

_____ c. by more than $50

4. This diagram shows the demand and supply curves for the aluminum market. Imagine that the whole industry starts a new advertising campaign to inform people how much better aluminum is than other metals for all kinds of uses. Assuming the campaign is successful- show the effects on the market of this campaign by drawing likely new demand and/or supply curves. Be careful on this one. (Lots of things can happen with a good advertising campaign.)



What happens to price and quantity sold?
a. Price increases/decreases/can't tell

b. Quantity increases/decreases/can't tell

LESSON 5

UNIT II
Exercise 5

LONG-RUN EFFECTS OF PERFECT COMPETITION ON RESOURCE ALLOCATION

According to Adam Smith, two advantages of an economy with highly competitive markets are that with perfect competition between producers, (1) scarce resources will be used to produce the output consumers want most and (2) output will be produced at the lowest possible price.

The market system works this way under conditions of perfect competition because there is so much competition between producers that each business must always try to make the biggest possible economic gain. Otherwise, the business will lose money and will eventually be forced out of the market entirely.

The purpose of this exercise is to use demand and supply curve analysis to predict the long-run effect of an increase in demand for a product in the case of perfect competition. We will use the diagrams to trace the market reactions to an increase in demand in a model world of perfect competition. The model market is wheat farming.

1. First let's review the assumptions made about market conditions in perfect competition. What must we assume with respect to the following conditions?

   a. Similarity of the product produced by competing farmers:

   b. The number of farmers:

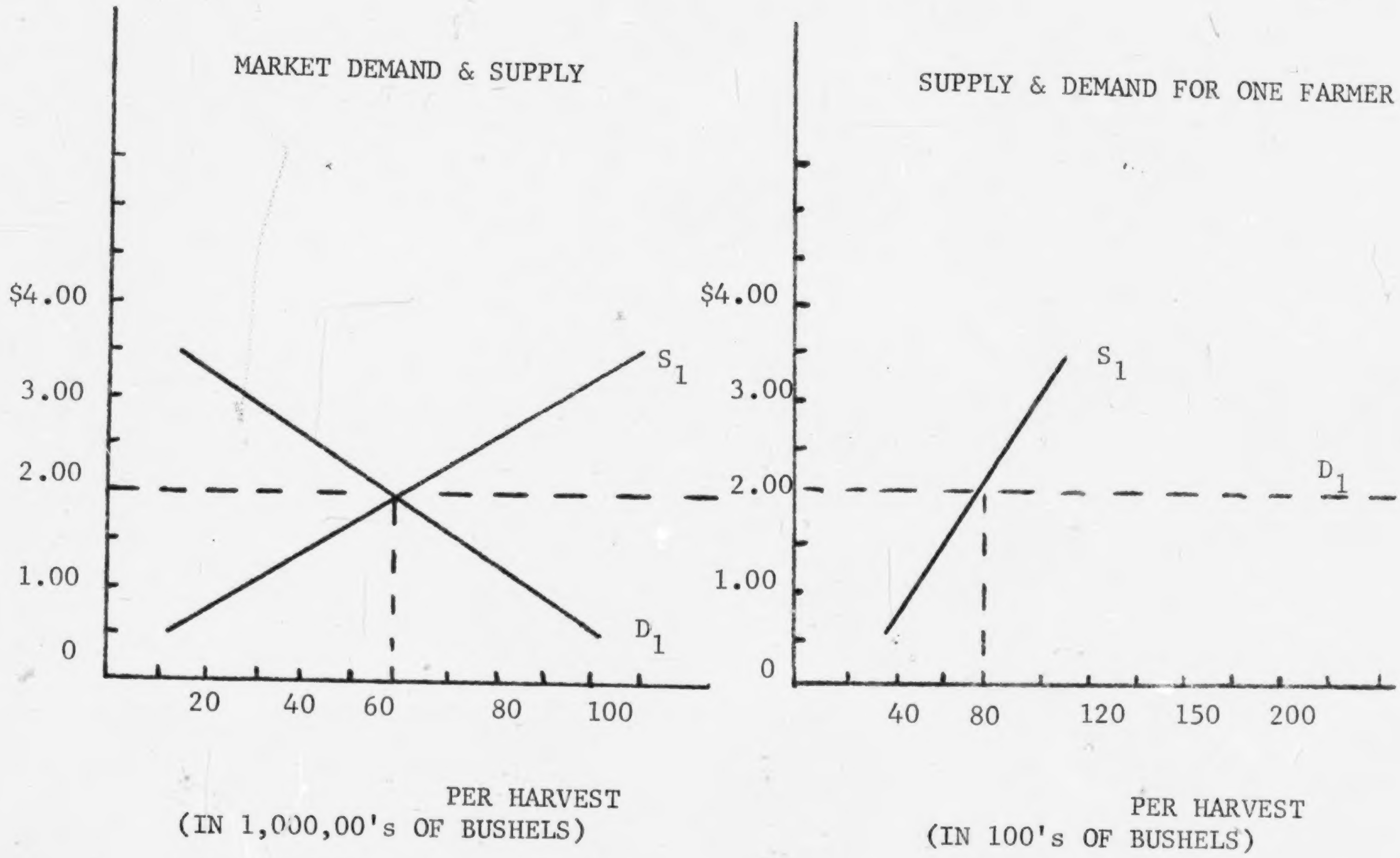
   c. The percentage of market supply provided by any one farmer.

   d. The ability of others to go into wheat production.

2. In the diagrams below the graph on the left shows the market supply and demand curves. The diagram on the right describes the market conditions for a typical wheat farmer.

Note that the unit of measure on the quantity scale is different for one producer than for the whole market. One farmer produces about 100,000th of the market supply.

Also, the slopes of the demand and supply curves are different, in particular, the demand curve for one producer is a horizontal line. This means that for one producer the price is fixed. The fact that the farmer's demand curve is a horizontal line drawn at the market price of $2.00 means that the individual farmer must accept the market price. He has no control over price, but he can get as much business as he can take care of at that price.



3. Assume that demand increases. In the diagram above, show the effect on both the market and on the firm by drawing new demand curves.

a. For the whole market: price increases/decreases/can't tell.
(circle one)
quantity increases/decreases/can't tell.

b. For one producer: price increases/decreases/can't tell.
quantity increases/decreases/can't tell.

4. What is the effect of this increase in demand on profit rates of the present wheat farmers?

a. Profit rates increase/decrease/can't tell.

b. What effect do these profit rates have on the market?

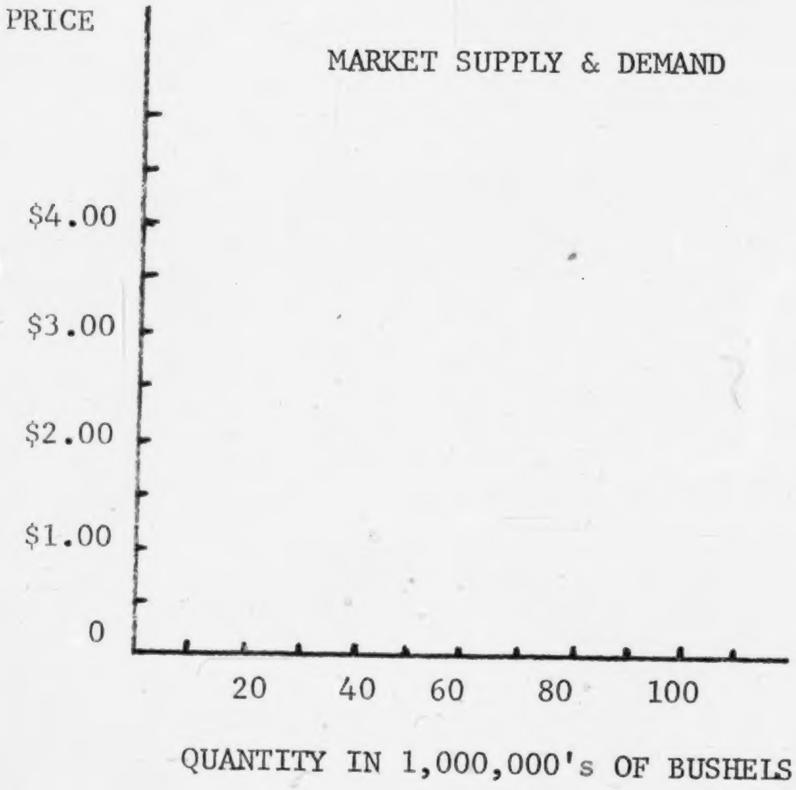
____

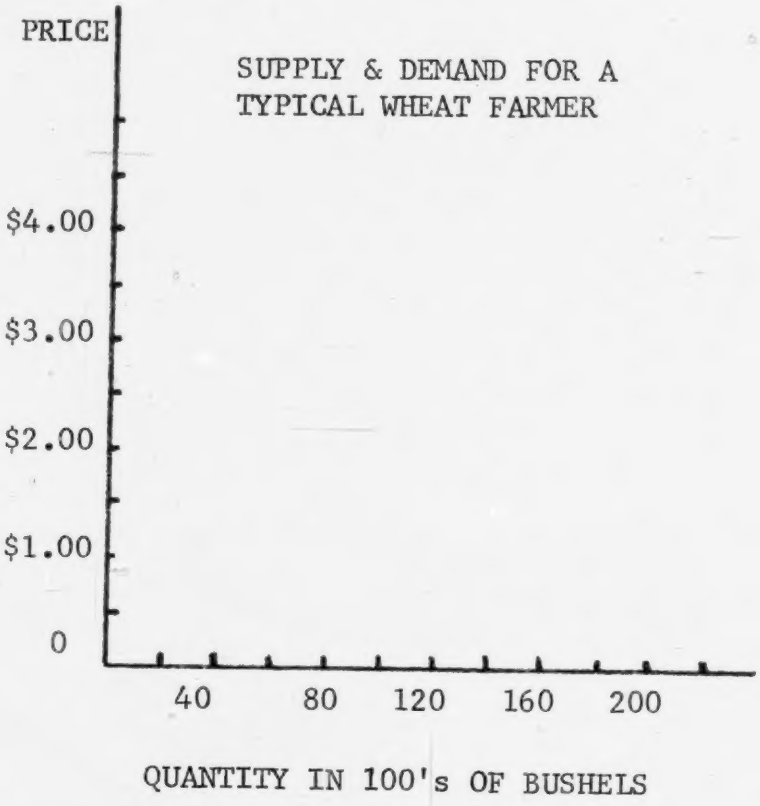
c. Draw new curves in the diagrams above to show this change in the market. This time use broken lines (---) so you can tell the difference between these new curves and the ones you just drew.

5. a. Assuming no other changes in demand or supply conditions, will the market eventually adjust to this increase in demand? ______ Yes ______ No

b. Show what the market will be like after it has adjusted completely to the change in demand by drawing new diagrams. Use the space provided on the next page to draw the demand and supply curves for the market and for the typical wheat farmer.

LONG-RUN EFFECTS OF THE INCREASE IN DEMAND





c. Compared to the original conditions which existed in the market before the increase in demand, what will be the long-run effect of the increased demand?

(1) Price will be higher/the same/lower than the original price.
(circle one)

(2) The quantity of wheat produced per harvest will be greater than/the same as/less than the original quantity.

(3) The quantity of wheat produced per harvest by the typical farmer will be greater than/the same as/less than the amount of business he did before.

(4) Profits for the typical producer will be higher/the same/lower than originally.

(5) The number of wheat farmers in the market will be greater than/the same as/less than originally.

LESSON 5

UNIT II
EXERCISE 6

EVALUATING PERFECT COMPETITION

The advantages of the perfectly competitive price system have attracted economists since the time Adam Smith wrote about the invisible hand of the market. We can summarize these advantages here:

1. It provides for decentralized decision making. There is no need or cause for the government or some other authority to decide how to allocate scarce resources.

2. The markets determine prices, thereby providing an automatic information system which informs producers of the desires of consumers and informs consumers of the cost of buying different outputs.

3. It provides an automatic response system (a cybernetic system). Because individuals buy and sell to further their own best interests, and because the system is highly competitive, producers and consumers respond immediately to changes in prices.

4. The system responds in such a way as to assure consumer sovereignty--consumer purchasing power determines what is to be produced, how output is produced and for whom it is produced.

5. The profit incentive and the high degree of competition require businesses to produce at as low a cost as possible, which means that they use resources efficiently and are quick to introduce more efficient methods of production.

Before we become staunch promoters of the perfectly competitive world, we should look for disadvantages of the system.

1. What would be the effect of perfect competition on the way income would be distributed among the population? In particular,

   a. Would there be many very rich people? How would the rich people acquire their wealth?

b. Would there be poor people? Who would they be and how would they get money to live on?

2. Would the perfectly competitive market system be as advantagous for producers as it would be for consumers? Explain.

3. Using the answers to the previous two questions as a start, try to decide how well a perfect competitive system would perform in promoting the five basic economic goals discussed in Unit I. Discuss each individually.

Economic justice

Economic progress

Economic stability

Economic security

Economic freedom

UNIT II
Lesson No. 6

Program No. 11

ELASTICITY OF DEMAND

FRAME 1

You have seen that as price goes up, people tend to buy less; as price goes down, people tend to buy more. But just how much more do people buy when the price is lowered? It depends upon the item. For example, a student with poor vision needs glasses; he would probably have them even if the price were double what it is now. On the other hand, if the price of butter doubles, grocers are likely to find that they sell a lot less butter (but probably more margarine). In other words, sales of some goods and services are more sensitive than others to changes in price.

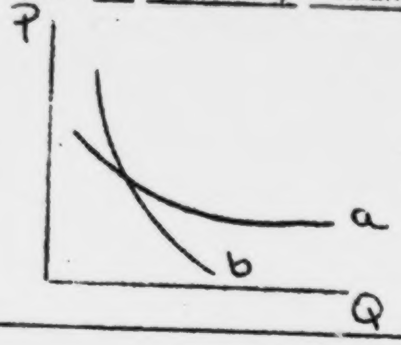
This sensitivity--the relationship between a change in price and the change in the quantity sold--is what economists call price elasticity of demand.

FRAME 2

Here are two demand curves. Which curve shows that for just a small change in price there is a large change in quantity demanded?

_____(a)

_____(b)



Curve (a) shows that for a small change in price there is a large change in quantity demanded.

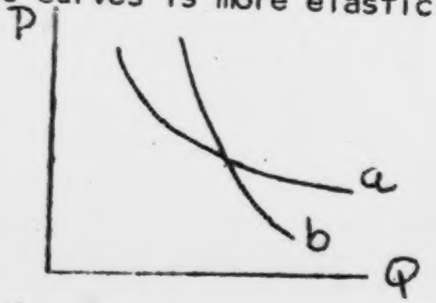
FRAME 3

When a small change in price produces a large change in demand, demand is said to be ELASTIC.

Which of these two demand curves is more elastic?

_____(a)

_____(b)



(FRAME 3 - continued)

Curve (a)

FRAME 4

Since we can describe any demand curve by its price responsiveness--that is, by its elasticity--we will discuss elasticity generally. After you can define elasticity and predict which products will have elastic demand, you will see why the monopolist needs this information to maximize profits.

Here are two market demand schedules. We've plotted the curve for Schedule A. Your job is to plot a curve for Schedule B on the same graph. Which curve is more elastic, A or B?

A.

MARKET DEMAND SCHEDULE

For Electric Blenders

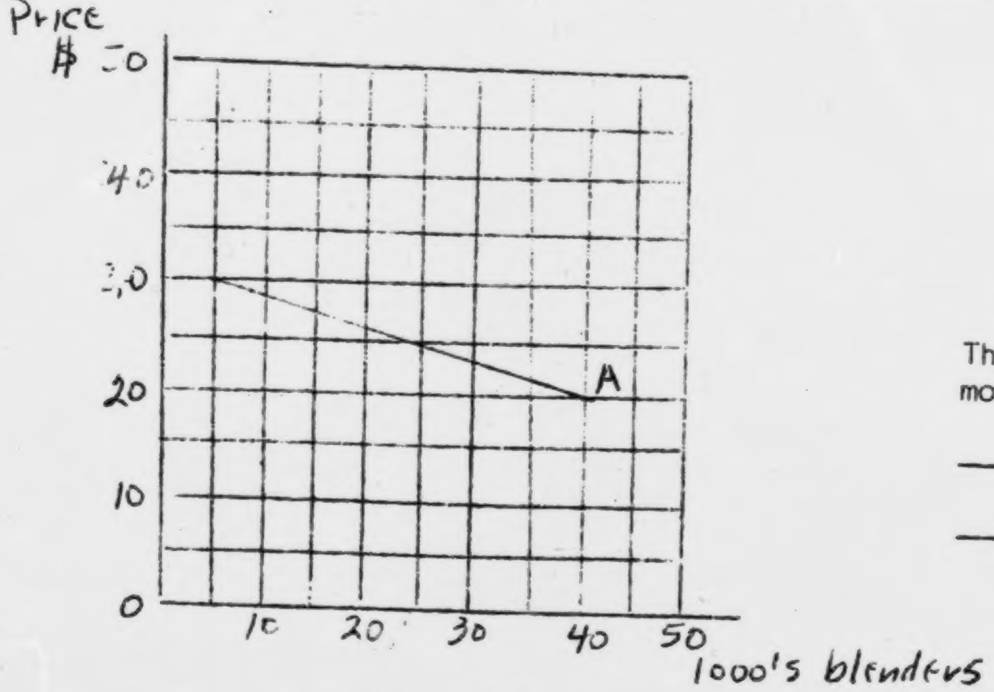
Price	Quantity (1000's)
$ 30	5
28	12
26	19
24	26
22	33
20	40

B.

MARKET DEMAND SCHEDULE

For Portable Electric Heaters

Price	Quantity (1000's)
$ 45	15
40	17
35	19
30	21
25	23
20	25
15	27

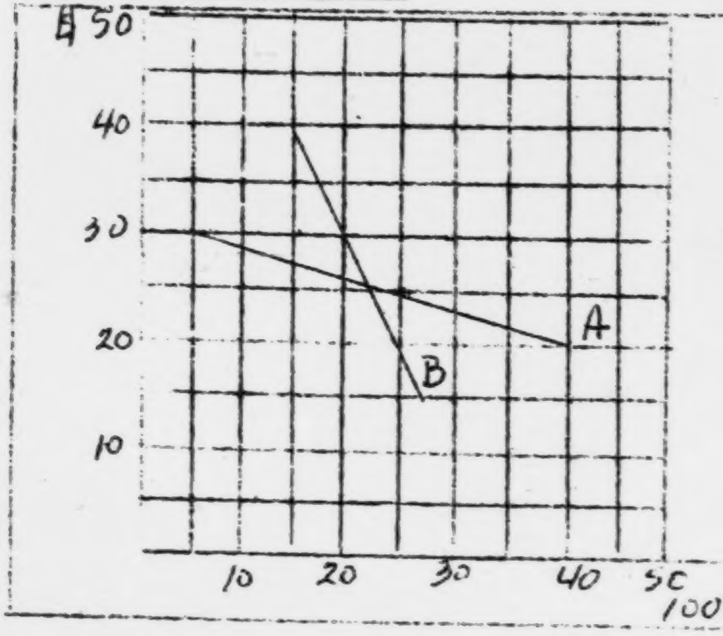


The curve that is more elastic is:

_____A.

_____B.

FRAME 4 - (continued)



NOTE:

We can show each curve on the same graph as long as the scales for each variable are the same; but beware of trying to compare curves on the same graph when scales differ.

A. is more elastic. Quantity demanded changes greatly for a small change in price.

FRAME 5

In the diagram you have just seen, the curve that indicates a more elastic demand is steep/shallow.
(pick one)

shallow

FRAME 6

The steeper the slope, the more/less
(pick one)
elastic is the demand.

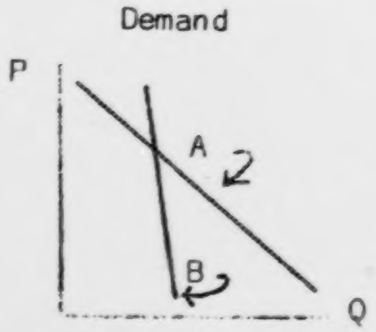
less

FRAME 7

As compared with A, demand for B is:

_____(a) more elastic

_____(b) less elastic



FRAME 7 - (continued)

(b) less elastic

In B, a change in price has little effect on quantity.

FRAME 8

While it's true that the steeper the slope, the less elastic the demand, this is not a precise way of talking about elasticity. It can be misleading. Slope and elasticity are not the same thing.

Let's define price elasticity more carefully:

> Demand is elastic when the percentage change in price causes a greater percentage change in the quantity demanded.

For example: If a 10 percent price increase leads to a 12 percent drop in quantity demanded, demand is elastic.

If a 12 percent price increase leads to a 15 percent drop in the number of items demanded, demand is elastic/inelastic.
(pick one)

elastic

The percentage change in quantity is greater than the percentage change in price.

FRAME 9

If a 10 percent price increase leads to an 8 percent drop in the number of items demanded, demand is ______________________.

FRAME 9 - (continued)

inelastic

the percentage change in quantity sold is less than the percentage change in price.

FRAME 10

If a price increase of 10 percent leads to no change in the number of items demanded, demand is ____________________.

inelastic

demand changed zero percent, which is less than the 10% change in price.

FRAME 11

Suppose we express elasticity as a ratio:

$$\frac{\%\text{ change in Quantity (Q)}}{\%\text{ change in Price (P)}}$$

Then recall the definition: Demand is elastic when the percentage change in price causes a greater percentage change in the quantity demanded.

Or, to say that a different way: If the percentage change in Q is bigger than the percentage change in P, demand is elastic.

Suppose a store's records show that for a certain item:

$$\frac{\%\text{ change in Q}}{\%\text{ change in P}} = \frac{10\%}{5\%} = 2$$

Is demand elastic?

_____Yes

_____No

FRAME 11 - (continued)

Yes

FRAME 12

We can figure elasticity simply by dividing:

$$\frac{\%\text{ change in }Q}{\%\text{ change in }P}$$

True or false?

Demand is elastic only when the value is greater than 1.

_____True

_____False

True

FRAME 13

If we divide:

$$\frac{\%\text{ change in }Q}{\%\text{ change in }P}$$

and get an answer less than 1, demand is elastic/inelastic
(pick one)

inelastic

FRAME 14

Suppose we divide:

$$\frac{\%\ \text{change in Q}}{\%\ \text{change in P}}$$

and obtain an answer of exactly 1.

This tells you that demand is unit elastic. That is:

(check one)

_____(a) The percentage change in price equals the corresponding percentage change in quantity. (But the change in quantity is opposite to the change in price.)

_____(b) The percentage change in price is greater than the percentage change in quantity.

_____(c) The percentage change in quantity is greater than the percentage change in price.

(a)
An elasticity of 1 says that a percentage change in price will lead to a corresponding percentage change in quantity (but in the opposite direction). For example, a 10 percent increase in price would bring about a 10 percent drop in the number of items demanded.

FRAME 15

Complete these statements about elasticity of demand:

(a) Demand is ______________________ if $\frac{\%\ \text{of change in Q}}{\%\ \text{of change in P}} > 1$

(b) Demand is ______________________ if $\frac{\%\ \text{of change in Q}}{\%\ \text{of change in P}} < 1$

(c) Demand is ______________________ if $\frac{\%\ \text{of change in Q}}{\%\ \text{of change in P}} = 1$

FRAME 15 - (continued)

(a) elastic
(b) inelastic
(c) unit elastic

FRAME 16

For each of these examples, indicate whether demand is elastic, inelastic, or unit elastic:

A. The price of TV trays increased 4%, and the quantity demanded dropped 6%. ________

B. The price of garden tools dropped 3%, and the quantity demanded increased 5%. ________

C. The price of hand cream increased 2%, and the quantity demanded decreased 2%. ________

D. The price of men's handkerchiefs dropped 8%, and the quantity demanded increased 5%. ________

E. The price of eggs increased and the quantity demanded stayed the same. ________

A. Elastic $\frac{6\%}{4\%} = 1.5$ (greater than 1)
B. Elastic $\frac{5\%}{3\%} = 1.66$ (greater than 1)
C. Unit Elastic $\frac{2\%}{2\%} = 1$
D. Inelastic $\frac{5\%}{8\%} = .62$ (less than one)
E. Inelastic $\frac{0\%}{\text{increase}} < 1$

FRAME 17

1. If elasticity of demand measures .25, demand is ________________.
2. If elasticity of demand measures 1, demand is ________________.
3. If elasticity of demand measures 3.5, demand is ________________.

FRAME 17 - (continued)

1. Inelastic 2. Unit elastic 3. Elastic

FRAME 18

To summarize, price elasticity of demand defines how sensitive quantity demanded is to a small price change.

If demand is elastic

$\frac{\% \Delta Q}{\% \Delta P} > 1$,

and quantity demanded is responsive to a price change.

If demand is inelastic

$\frac{\% \Delta Q}{\% \Delta P} < 1$,

and quantity demanded is not very responsive to a price change.

When demand is elastic, quantity demanded is so responsive to a price change that if price goes up, what will happen to total revenue (the money taken in by sellers, which equals the price times quantity sold)?

It will drop/rise.
(pick one)

drop

FRAME 19

Let's look at an example.

Suppose that if butter sells at 70 cents a pound, people buy (demand) 12,000 pounds a week. In this case, total sales or revenue (price times quantity sold) is $8,400 a week.

Now assume that the price of butter increases by 10% to 77 cents a pound and that people buy only 10,000 pounds a week--a 17% drop in quantity sold.

FRAME 19 - (continued)

(a) Is demand elastic?

_____Yes

_____No

(b) What happens to total revenue when price increases?

(Show your calculations.)

_____Increases

_____Decreases

(a) Demand is elastic.

The percentage change in quantity sold is

$$\frac{2,000}{12,000} \times 100 = 17\% \text{ (approx.)}$$

The percentage change in price is

$$\frac{7}{70} \times 100 = 10\%$$

Elasticity is $17/10 > 1$

(b) At the new price, total revenue is 77 cents X 10,000 pounds = \$7,700 per week. Total revenue decreases from \$8,400 to \$7,700 a week.

When demand is elastic, a small increase in price reduces quantity demanded so much that sales revenue declines despite the increase in price.

FRAME 20

When demand is elastic and price decreases, quantity demanded increases so much that total sales revenue increases/decreases.
(pick one)

increases

FRAME 21

For example, suppose that when mink coats sell for $2,000, women buy 1,000 coats a week; when the price is lowered by 10% to $1,800, women buy 2,000 coats. Prove that demand is elastic by showing what happens to total sales revenue.

(a) When price is $2,000, total sales revenue is __________

(b) When price is $1,800, total sales revenue is __________

(c) Total revenue increases/decreases when price drops.
(pick one)

(d) Therefore, demand is elastic/inelastic.
(pick one)

(a) $2,000 X 1,000 = $2,000,000

(b) $1,800 X 2,000 = $3,600,000

(c) Total revenue increases

(d) Demand is elastic

FRAME 22

In the case of elastic demand, the percentage change in Q (quantity demanded) is greater than the percentage change in P (price). As a result, a price increase causes total sales revenue to drop. When price drops, total sales revenue increases.

If demand is inelastic (not very price responsive) then:

(a) a price drop will mean a drop/rise in total sales revenue
(pick one)

(b) a price rise will mean an increase/decrease in sales revenue
(pick one)

FRAME 22 - (continued)

(a) drop; (b) increase (Exactly the opposite from what happens if demand is elastic.)

FRAME 23

At its usual price, demand for milk is inelastic.

If the price of milk is increased slightly, say by 2 cents per half gallon, we can tell, without calculation, that total revenue will

_____(a) increase

_____(b) decrease

(a) increase

When demand is inelastic, an increase in price leads to an increase in total revenue. Quantity sold does not drop enough to offset the increase in price.

FRAME 24

If you were a merchant trying to increase total revenue, you could do it by raising the price of goods for which demand is

_____(a) elastic

_____(b) inelastic

(b) inelastic

FRAME 25

Judging from the above analysis, if demand were unit elastic at a particular price and price increased, what would happen to sales revenue?

increase / decrease / stay the same
(pick one)

FRAME 25 - (continued)

stay the same

FRAME 26

Now complete these statements about elasticity of demand:

(a) When demand is elastic, a change in price will cause sales revenue to change in the same/opposite
(pick one)

(b) If a price increase causes total sales revenue to increase demand is elastic/inelastic.
(pick one)

(c) If price increases and total sales revenue decreases, demand is elastic/inelastic.
(pick one)

(a) opposite
(b) inelastic
(c) elastic

FRAME 27

Why is demand more elastic for some goods than for others?

Goods have elastic demand if. . .

(a) Many substitutes are available, or

(b) If they are luxuries, or

(c) If they are high-priced.

Which of the following, then, would you expect to have high elasticity?

_____(a) Mink coat

_____(b) Milk

FRAME 27 - (continued)

(a) Mink coat

FRAME 28

Milk has a low price elasticity of demand--changes in price have little effect on the quantity bought.

The availability of substitutes is an important factor here.

You can't get anything much cheaper than milk (at its usual price) to give you the same food value.

Yet, suppose a good "milk substitute" called "Dairi" is put on the market. It sells for less than milk. Then what about milk?

(a) The price elasticity of demand for milk could be higher-lower than before "Dairi" came on the market.
(pick one)

(b) Why?____

____

(a) higher

(b) a substitute is now available at a lower price.

FRAME 29

When substitutes are available at a comparable or lower price, demand for an item will tend to be elastic/inelastic.
(pick one)

elastic

FRAME 30

Which of these products (at lowest sale prices) would be most inelastic?

(a) Butter

(b) T-bone steak

(c) Bread

(c) Bread

You can use margarine instead of butter, ground chuck instead of T-bone steak, but there's not much you could get to take the place of bread at its lowest sale price.

FRAME 31

An item tends to have elastic demand if it has few/many substitutes.

many

FRAME 32

The demand for luxury items also tends to be elastic. Luxuries are the comforts and beauties of life: things that are not really necessary.

Which of these items would tend to have elastic demand?

_____(a) Gold cufflinks

_____(b) A silver candlestick holder

_____(c) A diamond necklace

Give a reason for your answer: ______________________________

____

FRAME 32 -(continued)

They would all have elastic demand. They are all luxuries.

FRAME 33

True or False?

Demand for items that are really necesssary tends to be inelastic; demand for items that are luxuries tends to be elastic.

_____(a) True

_____(b) False

(a) True

FRAME 34

The price of a good or service also plays some part in determining whether demand will be elastic or inelastic.

So far, we have talked about price elasticity as if demand for some products is elastic and for others inelastic. This is true for all practical purposes.

Suppose, however, that watermelon in April is 16¢ a pound and in September is 2¢ a pound. What general statement can you make about the year-round price elasticity of demand for watermelon?

____

It varies according to the price.

(If you said it varies according to the "season"--remember that it is the price which tells a shopper whether a produce item is "in season" or "out-of-season."

FRAME 35

Generally, at high prices demand is__________________;
at low prices demand is____________________.

elastic; inelastic.

FRAME 36

Even for something generally considered a necessity, there will probably be a price at which each buyer will decide that the item is a luxury.

If milk should require too much of a scarce resource (money), another food may have to be used as a substitute. So, if milk went up to, say, $5.00 per quart, what would probably happen to demand for it?

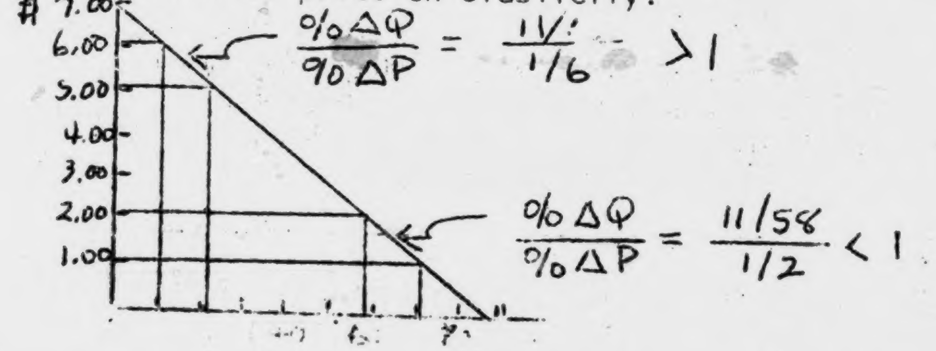
It would become more elastic / less elastic.
(pick one)

more elastic

(The higher the price of an item, the more elastic the demand is likely to be.)

FRAME 37

To see for yourself that for a straight line demand curve, elasticity changes constantly, study this graph. You won't be tested on this information, but you should find it interesting proof of the statements we made concerning the effect of price on elasticity:



$$\frac{\%\Delta Q}{\%\Delta P} = \frac{1 1/ !}{1/6} > 1$$

$$\frac{\%\Delta Q}{\%\Delta P} = \frac{11/58}{1/2} < 1$$

Thus, there is some price between $5.00 and $2.00 where

$\frac{\%\Delta Q}{\%\Delta P} = 1$ (This example shows you why elasticity and slope are not the same thing.)

504 (Go on to next frame.)

FRAME 38

Again, for most goods, demand is elastic at ________ prices; it is inelastic at __________ prices.

high; low

(Therefore, products which usually sell at a very low price--pencils, rubber bands, paper clips, bubble gum--have an inelastic demand. Price can double and still buyers don't leave the market. (The same holds true for watermelon in September.)

FRAME 39

Let's review:

A good (or service) tends to have elastic demand if. . .

(a) Many __________________ are available, or

(b) It is a ________________, or

(c) If it is ___________-_____________

(a) substitutes
(b) luxury
(c) high-priced

FRAME 40

Now try this question:

A bottle of insulin could be the only life-saver for a diabetic--at any price a drug firm wanted to ask. What factors make price demand for insulin inelastic?

____

FRAME 40 - (continued)

No substitutes available; a necessity. (In this case, price isn't a factor because the need is critical.)

FRAME 41

Describe a product with high demand elasticity in terms of the three characteristics of price elasticity of demand.

The product would have the following features:

(a)

(b)

(c)

The product would:

(a) have many substitutes

(b) be a luxury

(c) be high-priced

FRAME 42

Keeping the three characteristics in mind, indicate for the following whether demand is likely to be elastic or inelastic at normal prices. Why?

________________ (a) Caramel topping for ice cream.

____

________________ (b) Diamond ring

____

________________ (c) Gasoline

____

________________ (d) Butter

____

FRAME 42 - (continued)

A. Elastic

Caramel topping has many substitutes; it is not a necessity, even though it is low in price.

B. Elastic

A diamond ring is easily substitutable (to the point where you can simply do without it--unless your name is Zsa Zsa); it is a luxury; it is costly (you can find other uses for the money, one of our limited resources.

C. Inelastic

If the price rose steeply, we might begin cutting back on gasoline consumption, but for many people in our society, gasoline--or the power of transportation that it provides--is a necessity.

D. Elastic

Although butter usually isn't regarded as a luxury these days, and isn't generally considred costly (the way a diamond is), it has a ready substitute if the price moves upwards.

SUMMARY

1. Price elasticity of demand measures response of quantity demanded to change in price. It is the ratio of the percentage change in quantity demanded to the corresponding percentage change in price--at some particular place on the demand curve.

2. Economists refer to demand as inelastic, unit elastic, or elastic, depending on whether the percentage change in quantity demanded divided by the percentage change in price yields an answer that is less than, equal to, or greater than one.

3. Generally, a quick way to compare two demand curves for the degree of elasticity is to note the slopes of the curves. The steeper the slope, the less the elasticity.

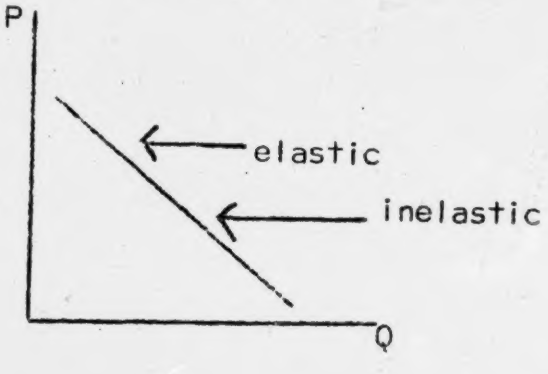
4. Although elasticity is related to slope, they are not the same thing and are not measured in the same way. (See 5-c below.)

5. Price elasticity of demand is affected by one or more of three closely related factors:

   (a) The availability of substitute goods or services.

   (b) The extent to which the good or service is necessary.

   (c) The price of the good or service. At high prices, quantity demanded is usually elastic. At low prices, quantity demanded is usually inelastic. Price elasticity of demand is different at different points on a demand curve--that is a straight line:



FRAME 43

Shortly the reason for learning about elasticity will become clearer to you. Elasticity is related to monopoly market power, and you are about to study pure monopoly markets--markets with only one seller (and into which other sellers cannot enter).

Because the monopolist is the only seller, the monopolist can set price. To maximize profits, he msut have a shrewd notion of how the amount he can sell of the good or service he produces is geared to changes in price. And that--as you have seen--is price elasticity.

If demand is elastic at the current price, it may be risky to raise the price. Why?

(Your own words)______________________________

____

Quantity sold will fall off too much and total revenue will drop. (On the other hand, it's good business practice to raise price if demand is in-elastic at the current price.)

FRAME 44

When all competition in selling the same good or service is, for some reason, effectively barred, one seller--supplying the whole market--has the power to raise or lower prices. The opposite of such a purely monopolistic market is a purely ______________ market.

competitive

FRAME 45

The monopolists can fix the price of a product by refusing to sell at any other price. The market supply and demand curves for the product are his supply and demand curves.

If the monopolist fixes the price, what will determine the quantity demanded?

____

____

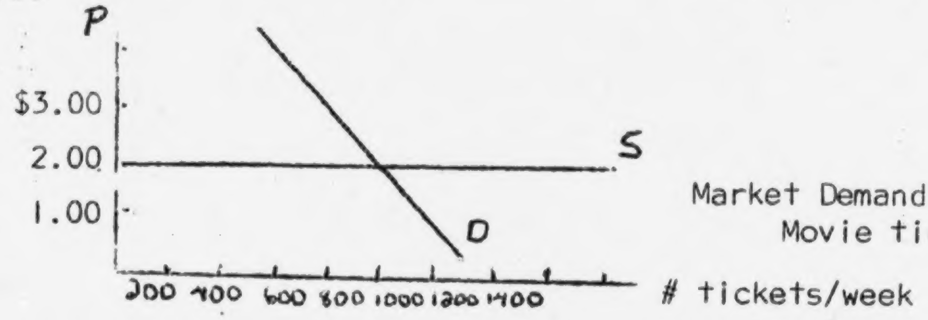
509

FRAME 45 - (continued)

The buyers' willingness to buy at the price fixed by the seller.

FRAME 46

Here is an example. Pretend that a small Montana town has the only movie theater within 50 miles. The monopolist fixes the price at $2.00 and will admit anyone who will pay the price. The theater sells 1,000 tickets per week. The market (and monopolist's) demand and supply curves look like this:



Market Demand & Supply
Movie tickets

The monopolist takes advantage of the demand conditions existing in the market so as to maximize his__________.

profits.

FRAME 47

The monopolist has market power, power to set price. The degree of market power--his leeway to change price--depends on how sensitive market buyers are to a change in price. How much less will they buy at a higher price? To prepare you to talk about market power, we have given you a new concept for describing the demand price-quantity relationship. It is the concept of price______________of__________________.

price elasticity of demand.

FRAME 48

Assume that each of the following have local monopolies in a small town. Choose the situation(s) in which the monopolist has the most market power. Explain your choice(s).

_____(a) Milk supplier

_____(b) Garbage collector

_____(c) Movie house

_____(d) Local Ford dealer

____

____

(a) and (b) have the most monopoly power because demand is probably less elastic for the good or service. Both are necessities with few substitutes.

FRAME 49

Under what circumstances can a monopolist raise his price and expect an increase in sales revenue?

When demand is elastic / inelastic.
(pick one)

inelastic

FRAME 50

So if the demand for a good or service is inelastic, a monopolist can raise his prices and expect an increase in sales revenue.

Therefore a shrewd monopolist would/would never continue selling at a price that is inelastic.

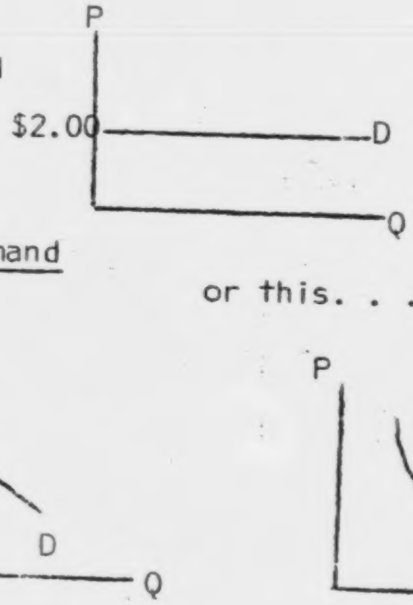
FRAME 50 - (continued)

would never

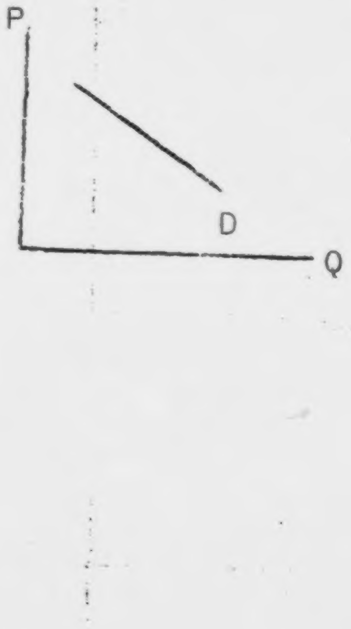
CONCLUSION

The closer substitutes there are for the monopolist's product or service, the more elastic will be his demand curve, and the less market power he will have. He will have competition from sellers of substitute products, and generally speaking, the more competition a monopolist faces, the more elastic his demand curve. A pure competitor has an infinitely elastic demand curve. Price is determined by the market, and the firm can sell only at that price.

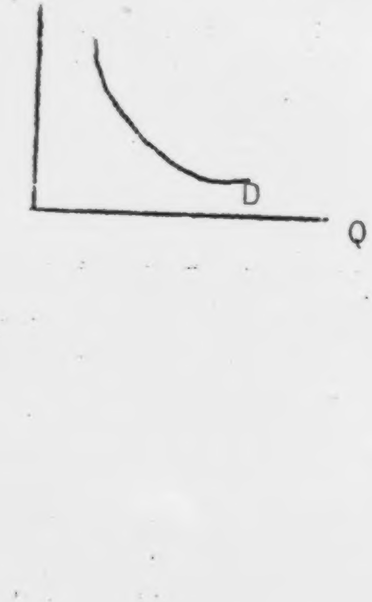
This means that the firm can sell all it wants at $2.00.



On the other hand, the market demand will look like this. . .



or this. . .



Unit II
Lesson No. 3

PROGRAM
CRITERION TEST

I
For the following goods and services, state (in column 2) whether you think demand tends to be elastic or inelastic; give your reasons in column 3.

Column 1	Column 2	Column 3
1. Potatoes - 5 lb. bag @ 39¢		
2. Gas at a station in Mojave desert (next nearest station 100 miles).		
3. Gas at the corner station in your neighborhood		
4. Jet flight, S.F. to Europe, Spring, 1967		
5. Filet mignon steak in fancy restaurant.		
6. Candy bars in school vending machine.		
7. A new headache remedy @ $1.98 for 6 tablets.		

CRITERION TEST
(continued)

II

Study these examples and write down whether demand is elastic or inelastic and whether total reveneu will increase or decrease if price goes up or down.

1. The price of earrings dropped 2% and the quantity increased 3%.

(a) Demand is __________________________.

(b) If price goes up, total revenue will_________________________.

2. The price of pepper grinders goes up 4% and the quantity sold stays the same.

(a) Demand is__________________________.

(b)` If price goes down, total revenue will_______________________.

3. The price of light bulbs goes up 5% and quantity sold goes down 1%.

(a) Demand is_______________________.

(b) If price goes down, total revenue will_______________________.

4. The price of boys' sox drops 3% and the quantity sold increases 2%.

(a) Demand is______________________.

(b) If price goes up, total revenue will_________________________.

5. The price of thermos bottles drops 6% and the quantity sold increases 8%.

(a) Demand is______________________.

(b) If price goes up, total revenue will_________________________.

UNIT II
Lesson No. 3

ANSWERS TO CRITERION TEST

I

Column I	Column 2	Column 3
1.	inelastic	few if any substitutes at the prices, necessity.
2.	inelastic	no substitute at any price; necessity.
3.	elastic	plenty of substitutes; not necessary to buy it at this station.
4.	elastic	Many substitutes; luxury; expensive
5.	elastic	cheaper substitutes can fill the need.
6.	Inelastic	A cheap item that satisfies the need and is available on the school grounds.
7.	elastic	other preparations will substitute at a cheaper price.

ANSWERS TO CRITERION TEST
(continued)

II

1. (a) elastic (b) decrease
2. (a) inelastic (b) decrease
3. (a) inelastic (b) decrease
4. (a) inelastic (b) increase
5. (a) elastic (b) decrease

LESSON 6

UNIT II
Exercise 7

PRICE ELASTICITY OF DEMAND: SUMMARY QUESTIONS AND PRACTICAL APPLIACTIONS

1. When does a good or a service have an elastic or inelastic demand? Give examples.

____

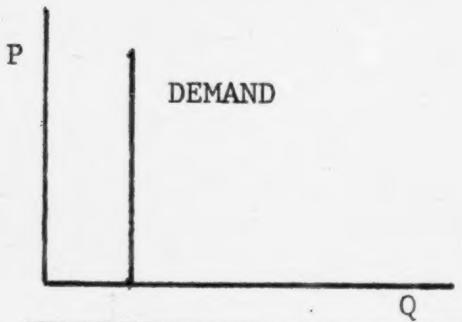
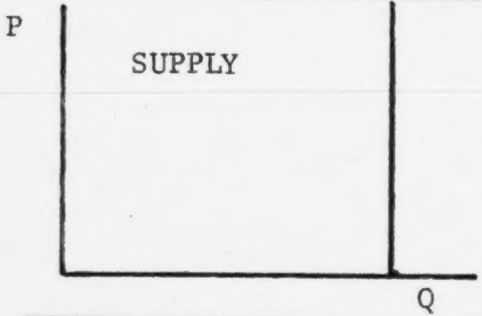
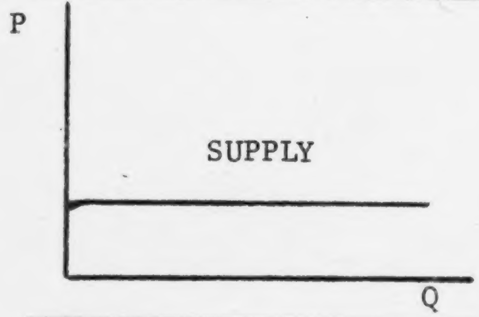
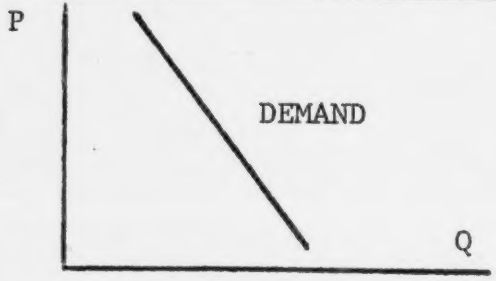
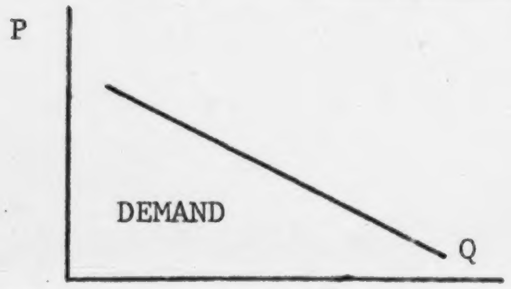
____

____

2. For the following goods and services, state (in column 2) whether or not you think demand is elastic, and give your reasons in column 3.

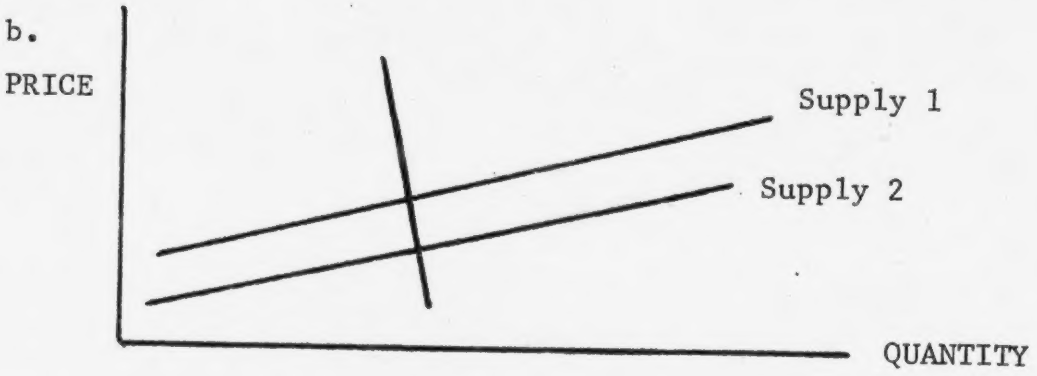
COLUMN 1 Product	COLUMN 2 Elasticity of demand	COLUMN 3 Reason
1. Bread at 27¢ a loaf		
2. Mustangs (1968) in California		
3. Rubber bands at the usual price		
4. Cigarettes at usual price		
5. Cigarettes at $3.00 per pack		

3. In column 2, describe the price elasticity of the demand or supply curves shown in column 1. In column 3, give a possible example of a product for which the market demand or supply curbe might have that shape; explain why.

COLUMN 1 Demand & Supply Curves	COLUMN 2 Description & Curve	COLUMN 3 Example
 A.		
 B.		
 C.		
 D.		
 E.		

4. a. The law of Supply and Demand allows us to predict whether price and quantity increase or decrease when market conditions change. For instance, if supply increases, demand remains the same, price will ________________________, and quantity will ________________________.

b.



Look at the diagram above and try to figure out what determines how much price and quantity will change when supply changes.

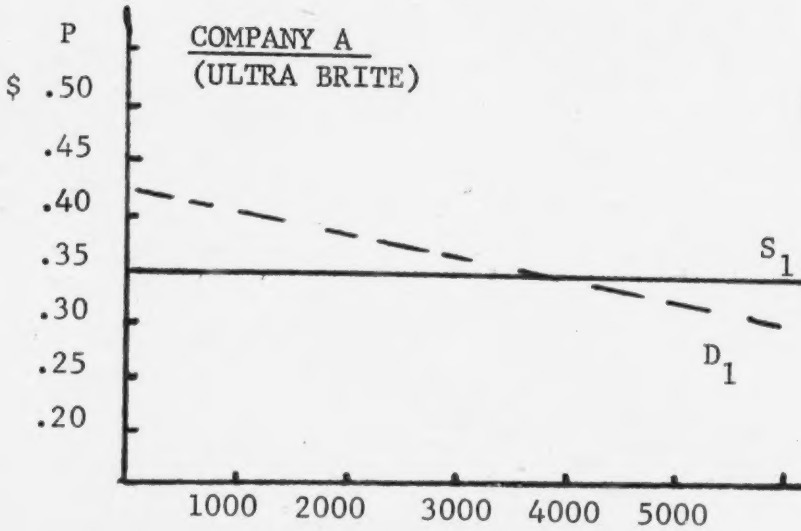
List the things which might determine how big a change in price and quantity will be brought about by a change in supply or demand.

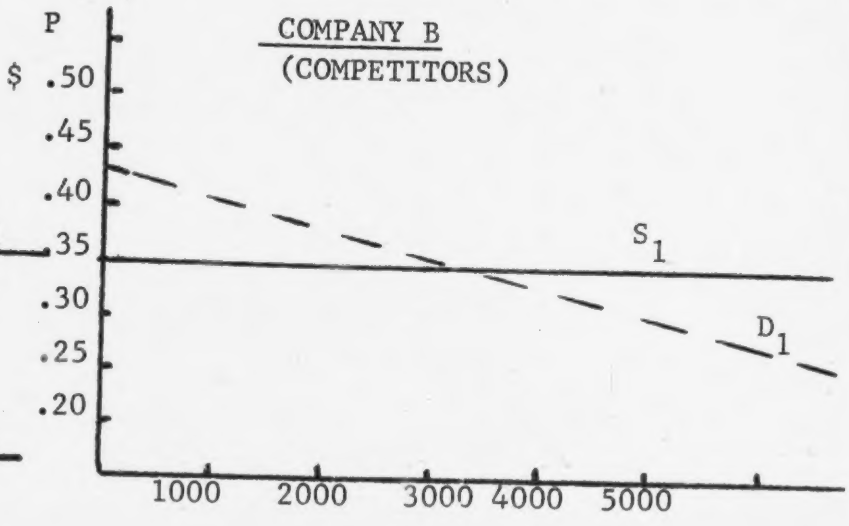
____

____

____

5. These diagrams show the demand and supply curves for two competing toothpaste manufacturers before manufacturer A launches a new and very successful advertising campaign with the tentalizing claim the "Ultra Brite give your mouth sex appeal!"





A. Why do the two firms have horizontal supply curves? What does that say about price and how does this conform to what you know about the way toothpaste prices are set?

B. If the Ultra-Brite advertising campaign is successful, what effect will it have?

It will Increase/decrease/not affect Company A's demand.
(circle one)

It will Increase/decrease/not affect elasticity of demand for Company A.

It will Increase/decrease/not affect Company B's demand.

C. Draw the new demand curves for each firm in the diagrams above.

D. If the campaign is a success, what change should occur in Company A's

price: It will increase/decrease/can't tell.

quantity sold: will Increase/decrease/can't tell

6. Assume that you are the sole producer of a rare metal because you own the only mine in existence. Assume also that for a wide price range market demand is inelastic. Because you are a monopolist you can set your own price. Would you sell the metal at a price where demand is elastic or inelastic? Explain your reasoning.

7. Assume someone invents a new metal alloy which is a little cheaper to produce and a good substitute for your metal.

a. What effect would this new development have on market demand for your metal?

b. You probably will be forced to lower your price. What will happen to your sales revenue? Will it probably go up or down? Explain.

LESSON 6

UNIT II
EXERCISE 8

PERFECT MONOPOLY

For this exercise, pretend that you are the only seller of Frosted Freeze ice cream cones in a small town. Market demand is given by Table I and Figure I. Your cost of production at different levels of output is shown in Table II and Figure II.

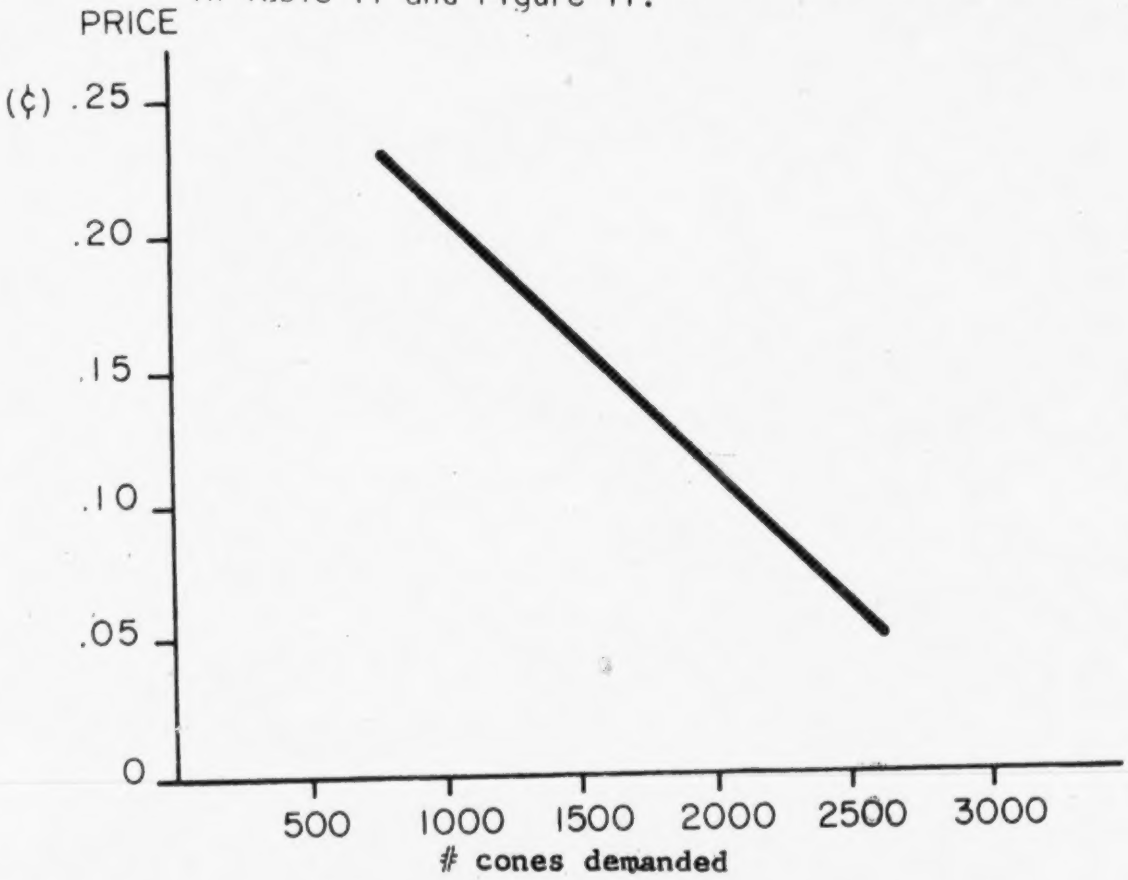


Figure I: Market Demand for Frosted Freezes

Table I
Market Demand For Frosted Freezes

Price per Cone	#Cones Demanded per day
5¢	2600
7	2400
9	2200
11	2000
13	1800
15	1600
17	1400
19	1200
21	1000
23	800

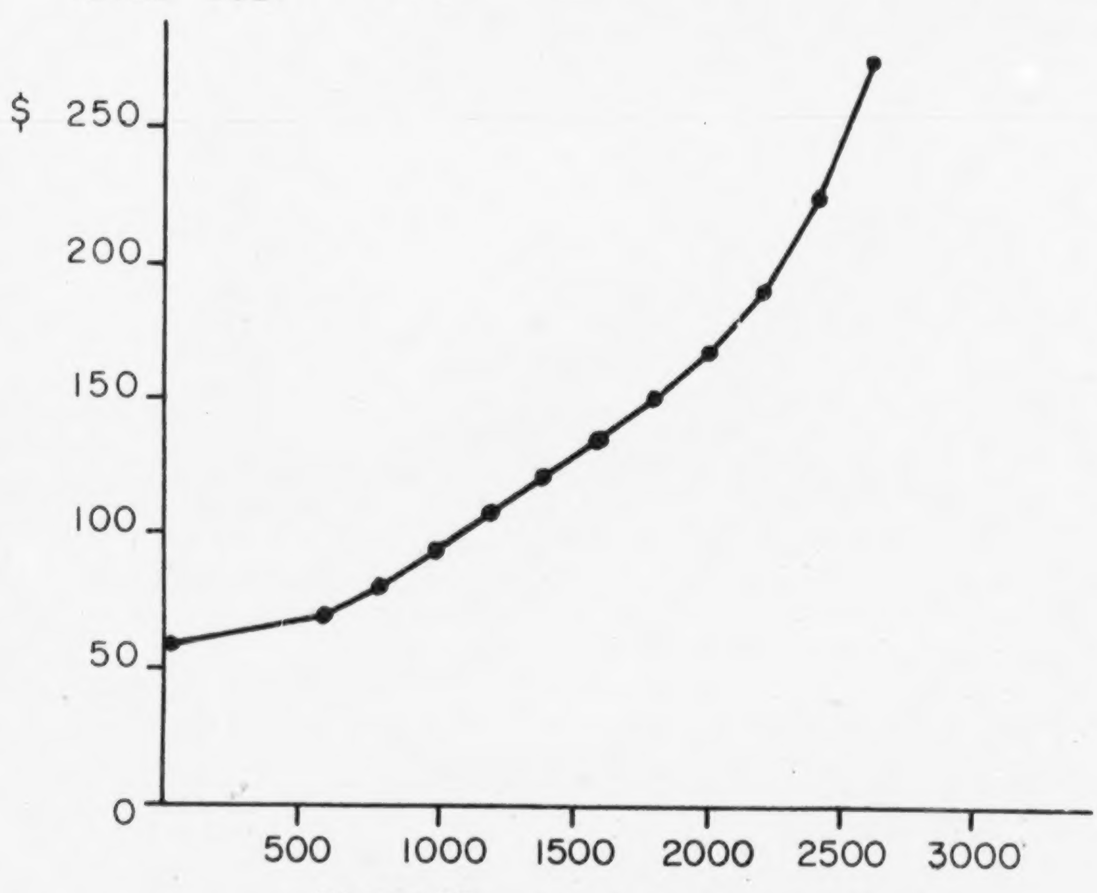


Figure II: Total Cost of Production

Table II
Total Cost of Production

Quantity Produced (# cones)	Total Cost per day
2800	340
2600	275
2400	225
2200	190
2000	168
1800	149
1600	134
1400	120
1200	106
1000	93
800	80
600	70
0	60

1. You're in busines to make as much profit as possible. Given the information on the previous page, how do you decide what do do? That's the object of the first part of this exercise.

   a. The first thing to do is to figure out what your supply curve is. After you think you know, draw it in Figure .

   b. What will be the market price and quantity sold?

      (1) price____________

      (2) quantity sold per day________________

      (3) What are your total profits per day?______________

      (4) Can you make greater total profits at any other price and quantity. If so, you've figured wrong and you should be operating at that price and quantity. Change your answer until you are operating at a price and quantity which give you the greatest possible total profit.

   c. What's the difference between you're behavior and that of the ear piercer in the Lesson 4 exercise?

2. In the case presented above, you are in a very good position to exploit your monopoly because of the nature of the demand for Frosted Freezes.

   Here is another demand schedule for Frosted Freezes. If this were your demand achedule, complete the columns in the table tyo calculate your best output and price, assuming you are operating under these demand conditions and the cost conditions shown in Table II.

TABLE III

Price/ cone	Quantity demanded per day	Total Sales	Total Cost	Total Profit (Sales - Cost)
7	2600		$275	
9	2200		190	
11	1800		149	
13	1400		120	
15	1000		93	
17	600		70	

a. You will sell __________ cones per day at a price of __________ per cone, and you will make a total profit equal to __________ per day.

b. Describe the difference between the two demand schedules. Why does the first demand schedule allow you to make higher profits and chzrge a higher price?

c. What does this suggest about what determines the ability of a monopolist to make high profits?

3. What would happen if someone decides to start selling Frosted Freezes in competition with you? Use the demand shown in Table I as the market demand before your competitor started into production, and answer the following questions.

   a. Can two businesses produce in this market and still both make profits? How do you know?

   b. Assume that your competitor's costs are the same as yours. How would he try to get business away from you?

   c. How would you respond to this competition?

   d. How would the competition affect your demand curve (schedule)?

   e. Do you think you could drive your new competitor out of business? How?

LESSON 6

UNIT II
EXERCISE 9

COMPARISON OF PERFECT COMPETITION AND PERFECT MONOPOLY

1. Use the Table below to summarize the differences between perfect competition and perfect monopoly. Complete the table for the case of pure monopoly.

MARKET CONDITIONS (Supply and Demand Conditions)	MARKET CONDUCT OF COMPETITORS (Price Determination, competition between firms	MARKET LONG-RUN PERFORMANCE
PERFECT COMPETITION . Very large number of firms . No large-sized firms--no firms have any control over demand conditions. The firm's demand curve is a horizontal line. . Each firm produces a product which is identical to that produced by his competitors . There are no barriers to entry of new firms. Whenever profits are abnormally high, new firms enter industry.	1. Firms cannot set price; they can only adjust production to try to get the highest profit. 2. Whenever profits are abnormally high, new firms enter production. 3. Firms copy each other's inventions. 4. Firms cannot keep other firms from starting in business	1. The price equals cost of production and a normal profit. 2. Profits are just high enough to keep firms producing, but not high enoucht to induce new firms to enter the industry. 3. Firms produce output using the most efficient means of production.
ERFECT MONOPOLY		

2. What is perfect about these two markets? What does perfect mean here?

UNIT II
Lesson 7

Program #2

MARKET STRUCTURE

In people, perfect behavior is always suspect. We say, "That boy is too good to be true," and we can say the same thing about the "perfect" market we have been considering--perfect competitition and perfect monopoly. They are models, idealizations which show relationships and which permit us to explain or predict but which are not the real world.

In the real world, we cannot classify markets quite so neatly. In fact, it is just about impossible to find examples of perfect competition or perfect monopoly. Practically all markets lie somewhere between the two extremes--they are cases of imperfect competition.

When you are through with this lesson you will be able to identify the major types of imperfectly competitive markets in which various industries are categorized. Given information on the competitive conditions in a real market, you will be able to categorize it into the most appropriate market type. You will also be able to recognize the characteristics of each type of market.

FRAME 1

Although perfect markets are virtually non-existent, they are not useless. But because they are not sufficient to describe reality, we need to be able to identify some more realistic types of markets.

Before we do that, let's make sure that you have the model of perfect markets firmly under control.

Of the following, which most closely resembles (i) a perfect competitive market and (ii) a perfect monopoly market?

(a) San Francisco's crab fishing fleet with its many individually-owned boats.________________

(b) The lone grocery store in an 1849 Gold Rush town.

____

(a) The crab fishing fleet most closely resembles the perfect competitive market--many boats catching and selling essentially the same product.

(b) The grocery store provided a sole source of supply. If you wanted to buy your groceries in town, there was just one place to buy them. Thus, its situation was close to perfect monopoly.

FRAME 2

Each of the perfect markets can be analyzed in terms of at least three characteristics:

(1) Concentration

(2) Barriers to Entry

(3) Product Differentiation

FRAME 2 continued on next page.

FRAME 2 - (continued)

Concentration refers simply to the number and size of sellers in a market. If there are many sellers in the market with none so big that it provides a substantial percent of supply in the market, concentration is low. If there are only a few sellers or if only a few have the lion's share of the market, concentration is high. If all selling is concentrated in a single seller, concentration is complete.

A market with high concentration more closely resembles:

_____(a) perfect competition

_____(b) perfect monopoly

(b) perfect monopoly

FRAME 3

In perfect competition, concentration is

_____(a) high

_____(b) low

(b) low

Selling is spread among many firms, to the point where we might say that there is no concentration at all.

FRAME 4

Now fill in the type of market that should appear opposite each item in the column headed concentration.

TYPE OF MARKET	CONCENTRATION
(a)	NONE
(b)	COMPLETE

FRAME 4 - (continued)

(a) PERFECT COMPETITION (b) PERFECT MONOPOLY

FRAME 5

On page 62, Table I, you are going to begin building a chart that will eventually describe the characteristics of five kinds of markets. You will be making up this chart as you work through the program, ultimately filling in all the numbered and lettered spaces.

Start by turning to page 62 now. Describe the concentration for the two markets you've studied so far by filling in the two squares market (I). (Use the terms "complete" and "none" in the appropriate spaces. Check yourself by reviewing the chart in Frame 4 above.)

FRAME 6

The second characteristic which describes the types of market is

Barriers to Entry

This characteristic describes how hard it is to get into the business of selling a particular commodity.

Which word describes how difficult it would be to set up a business in a perfect monopoly market?

_____(a) Hard

_____(b) Easy

(a) Hard

In a perfect monopoly market, one company has everything "sewn up." It would be far from easy to break in--at least it would be hard to do so for the economic reason of making a profit.

TABLE I

MAJOR CHARACTERISTICS OF THE FIVE GENERAL MARKET TYPES

TYPE OF MARKET	CONCENTRATION		
(a) Perfect Competition	(1)	(2)	(3)
(b)	(4)	(4)	(4)
(c)			(5)
(d)			(6)
(e) Perfect Monopoly	(1)	(2)	(3)

FRAME 7

What about the perfectly competitive market?

To set up a business in a perfectly competitive market would be:

_____(a) Hard

_____(b) Easy

(b) Easy

The perfectly competitive market is one with many sellers of the same product. One more seller is not going to make any difference to the market. Equally, the new seller is not going to do much better than anybody else.

FRAME 8

Go back to page 62 again, and in Table I, which you are constructing, add a new heading. At the top of the third column print:

BARRIERS
TO ENTRY

In the spaces marked (2) insert the words "complete" and "none" opposite the types of market they describe. Check your answers in the box below, and then go to the next frame.

Under "Barriers to Entry" opposite "Perfect Competition" you should have written NONE; opposite "Perfect Monopoly" you should have written COMPLETE.

Product Differentiation.

FRAME 9

When we say that the product sold by sellers is "differentiated," we simply mean that the good or service is not standardized. Each firm's output is, in some way, different. We'll look at that definition more closely in a moment, but it will serve for the time being.

In a market which comes close to being a perfect competitive market (for example, the crab market), how much product differentiation would you expect?

_____(a) A lot

_____(b) None

FRAME 9 - (continued)

(b) None

By definition, a perfect competitive market is one in which many sellers produce exactly the same product. There is no difference in the products of different firms in a perfect competitive market, or, to say it formally, there is no product differentiation.

FRAME 10

In a perfect monopoly, on the other hand, the seller offers a product that is

_____(a) the same as his many competitors' product.

_____(b) different, because there is no one else producing what he produces.

(b) different

FRAME 11

By definition, a seller in a monopoly market is the sole source of his product or service.

Product differentiation for the monopolist is:

_____(a) zero

_____(b) complete

(b) complete.

The product offered in a perfect monopoly market is different enough from the products of competitors to be considered a separate and distinct market. No other producer is providing a product which is a close substitute for the monopoly product.

FRAME 12

At the top of the fourth column in Table I (page 62), print:

PRODUCT
DIFFERENTIATION

In the spaces marked (3) insert the words "complete" and "none" opposite the types of market they describe. Check your answers in the box below, and then go the the next frame.

Perfect Competition: NONE

Perfect Monopoly: COMPLETE

FRAME 13

Now let's review your answers in Table I.

If you have completed the table correctly to this point, you should have the characteristics of perfect competition as:

concentration, none; barriers to entry, none; product differentiation, none.

The characteristics of perfect monopoly should be shown as:

concentration, complete; barriers to entry, complete; product differentiation, complete.

If your entries in Table I were incorrect or incomplete, please put them in order before going on. By completing the chart correctly you will learn the characteristics of the basic types of markets.

FRAME 14

As you will see later, there are other characteristics which help to describe different types of market. But the three covered to this point are the most important.

Note how the extreme cases described by the perfect markets reflect the extreme of all three characteristics. As a result:

(a) In perfect competition there is
_________________product differentiation.

(b) In perfect monopoly there is
_________________product differentiation.

FRAME 14

(a) no

(b) complete

This concludes the discussion of the characteristics of the perfect markets. Next, we will look at markets as they exist in the real world.

If you wish to take a break, this is a good place to do so.

MARKETS IN REAL LIFE

FRAME 15

It's time to transfer attention to the somewhat less than "perfect" markets of reality. We are going to group real-life markets into three types, all of them lying somewhere between the extremes represented by perfect competition and perfect monopoly.

In many cities, there are quite a few stores which sell nothing but phonograph records. It seems that someone is always opening a new record shop.

Circle whichever of the following best describes the characteristics of the market in which these record shops operate:

Concentration:

(a) none, (b) low, (c) high, (d) complete.

Barriers to Entry:

(a) none, (b) low, (c) high, (d) complete.

Concentration: (b) low.

Barriers to Entry: (b) low.

FRAME 16

Concentration is low in this market because many other stores sell phonograph records.

Barriers to Entry are low, too. Some barriers do exist--it takes money to start a business, for instance--but it would not be hard to come into this market with a new store.

> Since you know the extent of concentration and barriers to entry for the record business, it should be easy for you to identify the type of market this business most closely resembles. Check one.
>
> _____(a) Perfect competition
>
> _____(b) Perfect monopoly

(a) perfect competition

FRAME 17

But now look at the third characteristic, Product Differentiation.

To arrive at a rating under this heading we might ask, "What is different about buying records in one store rather than in another?" Or, "What distinguishes one record store from other stores that sell similar products?"

> Try to write down at least two things that might lead you to buy records at a particular store in preference to other stores.
>
> ____
>
> ____

FRAME 17 - (continued)

Some of the major things that might distinguish the offerings of one store from another are:

Brand Names: Different stores may specialize in different brand names. Not too important in the record business, perhaps, but the manufacturers of some products spend millions of dollars in the hope that you will pick up their brand next time you buy.

Selection: One store may offer a much wider choice than another does. The special record store will have a much greater selection than will the local supermarket.

Location: A particular store may get your business simply because it is on your way home.

Service: Perhaps one record store has rooms in which you can listen before you buy; maybe it has a cute girl/handsome boy to wait on you, or maybe the owner knows a lot about music; or perhaps it offers a better guarantee or quicker service than its competitors.

FRAME 18

Anything which makes the good or service seem different from that sold by a competitor creates product differentiation.

In other product lines, dozens of other minor differences exist--flavor, color, shape, catchy names, advertising, packaging, amount of suds, image--and each can be exploited to make the buyer feel that the product is superior to others. Altering any of these changes the product.

By emphasizing differences like these, each seller tries to make you feel that his product or his store offers the sole source of satisfaction for some particular want.

An a situation in which there is only one source of supply is called____________________.

Monopoly

FRAME 19

Each form of product differentiation is a tiny step toward making the product unique. It is, in other words, a step toward building a characteristic of monopoly. Note that it does NOT in fact create a monopoly. It simply moves the type of market a little away from the perfect competition model and a little toward perfect monopoly.

Not surprisingly, a market that has most of the characteristics of competition plus some overtones of monopoly is given a name that is a combination of both:

monopolistic competition

Monopolistic competition describes a market that has (a lot/a little) of the qualities of competition and (a lot/a little) of the qualities of monopoly.

Monopolistic competition has A LOT of the qualities of competition and A LITTLE of the qualities of monopoly.

FRAME 20

Which of these industries is most likely to be classed as monopolistic competition?

_____(a) Makers of glass-bottom boats in Florida

_____(b) Television repairmen

_____(c) Lemon growers

(b)

FRAME 21

What are the characteristics of an industry such as TV repair?

Concentration: (circle one) low/high
Barriers to Entry: (circle one) low/high
Product Differentiation: (circle one) some/none

FRAME 21 - (continued)

Characteristics of the TV repair industry:

Concentration: Low. There may not be a TV repair shop on every street, but a community of any size is likely to have several of them.

Barriers to Entry: Low. Plainly, anyone going into this business would need some know-how about TV sets. He would also need a small amount of equipment and some tools. But there is little else to stop his setting up a business.

Product Differentiation: same. The TV repairer might advertize, or do a good job so that his reputation gets around, or offer faster or cheaper service. But basically, the service offered is fixing TV sets. This repairman may try to arrange things so that in your mind he has a monopoly--you would not think of going elsewhere if your TV needed fixing--but to a stranger in town, one repairman would be much the same as the next.

FRAME 22

Turn to page 62, Table I, and write "Monopolist Competition" in the space marked (b).

In the spaces marked (4), write in the characteristics of a monopolistic competition-type market. (Use the descriptions "Low" or "high" under Concentration and Barriers to Entry; write "None or "Some" under Product Differentiation.)

Be sure to do this before going on to the next frame.

Here's the way that line in your chart should look:

TYPE OF MARKET	CONCENTRATION	BARRIERS TO ENTRY	PRODUCT DIFFERENTIATION
. . . .	. . . .	. . . . .	. . . .
(b) Monopolistic Competition	(4) Low	(4) Low	(4) Some

If your entries were incorrect or incomplete, please fix them before going ahead

FRAME 23

Using what you know about each industry, classify each of the following kinds of producers as one of the types of markets we have discussed.

Show the characteristics of each:

	Concentration	Barriers to Entry	Product Diff.	Market Type
Drug stores in a large city	______	______	______	______
Wheat farming	______	______	______	______
Telephone service	______	______	______	______
Gas station in the desert	______	______	______	______

	Concentration	Barriers to Entry	Product Diff.	Market Type
Drug stores in a large city	low	low	some	Mon. Comp.
Wheat farming	none	none	none	Perf. Comp.
Telephone service	complete	complete	complete	Perf. Mon.
Gas station in the desert	complete	complete	complete	Perf. Mon.

Entry into the drug store business is rated "low" because it does require a certain amount of money, a licensed pharmacist, and so on. There are essentially no barriers to entry in producing wheat because there are millions of farmers who can switch from growing one crop to another without additional cost.

Considered from a regional point of view, the telephone service is virtually a perfect monopoly. The desert gas station comes close to being a perfect monopoly since it offers its goods and services in a location where no other gas station would probably want to compete, because there isn't enough business to warrant two gas stations.

OLIGOPOLY

FRAME 24

As you may have guessed, the characteristics of monopolistic competition can be found in a great variety of combinations. This is a very flexible category and it includes the majority of the nation's twelve million different businesses.

However, there are two other types of market, rather similar to each other. They are much smaller in the total number of businesses included, but because they represent a large percentage of sales, they are very important in the nation's economy. To describe them, we use a new word: Oligopoly.

Our earlier word, monopoly, comes from two Greek words, monos meaning "alone" and polein meaning "to sell." Oligopoly is also from the Greek. Oligo means "a few." (Its ending also means "to sell.")

If "monopoly" means that one seller (alone) has control of selling, then "oligopoly" means that

_____sellers have control of the selling.

a few

FRAME 25

In an oligopoly market, a few large sellers dominate the market. For example, a 1954 survey showed that there were only 28 companies producing salt in the U.S. and that the four largest companies accounted for 86 percent of the business.

This is an example of a (n)____________________.

Oligopoly. (Say it to yourself.)

FRAME 26

In general, mass-production industries are oligopolies--that is, a few companies dominate the market.

Circle the characteristics of an oligopoly:

Concentration: (a) none, (b) low, (c) high, (d) complete.

Barriers to Entry: (a) none, (b) low, (c) high, (d) complete.

Concentration: (c) high. By definition, an oligopoly is a market in which control is concentrated in the hands of a few sellers.

Barriers to Entry: (c) high. This may be less obvious. But if it were easy to enter this market (and, of course, stay in it), there would not be just a few sellers. In most cases, it takes a lot of money and/or know-how to enter an oligopoly market.

FRAME 27

We can distinguish between two kinds of oligopoly markets. We will call them simply Oligopoly #1 and Oligopoly #2.

In Table I, in space (c), write Oligopoly #1, and in space (d), write Oligopoly #2. Under Concentration and Barriers to Entry, write "high" in each case.

The remaining characteristic, the heading under which these two types of oligopoly differ, is ______________________________.
(Write in the missing word(s).)

Product Differentiation

FRAME 28

In one type of oligopoly, the product is standard; all firms sell the same product. For example, in what is called the primary aluminum industry, there are just four companies. All produce aluminum ingots.

This is the type of market which we will classify as Oligopoly #1.

In Table I, under the words Oligopoly #1 in space (c) insert: "standard product."

In Table I, space (c) should now contain the words:

OLIGOPOLY #1
(standard product)

For Oligopoly #1, choose the word which should be inserted in Table I under the heading, Product Differentiation. (Then write it in space (5) in Table I.)

_____ (a) none

_____ (b) some

Product Differentiation: none
The product is standard. (If you haven't done so, write this word in space (5) in Table I.)

FRAME 29

Now let's look at the automobile industry. One might say that this industry is basically in the business of producing gasoline-powered transportation.

Do you think that automobile makers produce a standard product as in the case of the primary aluminum industry?

_____(a) Yes

_____(b) No

(b) No.

FRAME 30

Automobile makers do not produce a standard product. In fact, each tries hard to convince the public not only that his product is better than any other, but that even within his product line there are many shapes, sizes, colors, horsepowers, and all kinds of optional features. Or, to say that another way, the products are differentiated.

The automobile industry is an example of an oligopoly (a market in which a few companies dominate the market), but it is NOT an example of what we have called Oligopoly #1 because the product is not standard.

Instead, the automobile industry is an example of what we will call Oligopoly #2.

In Table I, under Oligopoly #2, in space (d), insert in the appropriate place the words "differentiated product."

Do this now, before going on.

In Table I, space (d) should now contain the words:

OLIGOPOLY #2

(differentiated product."

For Oligopoly #2, which word should be inserted in space (6) under the heading, Product Differentiation?

_____(a) none

_____(b) some

FRAME 30 - (continued)

(b) some. Please insert this word in space (6).

FRAME 31

It may help you to remember the difference between what we have called Oligopoly #1 and Oligopoly #2 if you think of it like this:

In Oligopoly number one, the products are all like one, that is, they are standard.

In Oligopoly number two, there is more than one product that is, the products are ____________________.
(what's the word?)

differentiated.

FRAME 32

Let's review the markets we have discussed so far. To begin:

(a) The only market type that has no concentration is ____________________.

(b) The only market type that has complete concentration is ____________________.

(a) perfect competition

(b) perfect monopoly

FRAME 33

Below, write in the names of the three market types that are between the two extremes of perfect competition and perfect monopoly.

TYPE OF MARKET	CONCENTRATION	BARRIERS TO ENTRY	PRODUCT DIFFERENTIATION
(a) Perfect competition	none	none	none
(b) ________	low	low	some
(c) ________	high	high	none
(d) ________	high	high	some
(e) Perfect monopoly	complete	complete	complete

(b) Monopolistic competition
(c) Oligopoly #1
(d) Oligopoly #2

Study the above copy of Table I carefully.

When you think you're ready to produce the right-hand side as well, go on to the next frame.

FRAME 34

Insert the missing words in the following table:

Market Type	Concentration	Barriers To Entry	Product Differentiation
________	high	________	none
________	none	________	________

FRAME 34 - (continued)

Market Type	Concentration	Barriers To Entry	Product Differentiation
Oligopoly #1	high	high	none
Perfect Competition	none	none	none

FRAME 35

We hope that you have noted:

(1) Each type of market can be described in terms of its characteristics.

(2) The three types of market we have just added bridge the gap between the "perfect" markets.

Remember that there are many refinements possible for each type of market. The types we have named are simply convenient categories by which we group markets for purposes of discussion.

Of the three new market types, the one that most closely resembles a perfect monopoly is

(a) ____________________________(write your answer)

Of the three new market types, the one that most closely resembles perfect competition is

(b) ____________________________(write your answer)

(a) Oligopoly #2 (Differentiated Product)

(b) Monopolistic Competition

FRAME 36

You may recall that as an example of an almost perfect monopoly we cited the lone grocery store in an 1849 Gold Rush town.

True or false? The grocery store in a Gold Rush town was a monopoly only so far as its local market was concerned?

______(a) True

______((b) False

(a) True.

FRAME 37

The grocery store in the Gold Rush town was a monopoly only so far as its local market was concerned. There were many other grocery stores in the nation. But none were readily available to people living in that particular town.

True or false? A business may have a monopoly because of the geographic location or extent of its market. (a) True (b) False

(a) True again. It is possible to have, in effect, a local monopoly.

FRAME 38

Now the economist is unlikely to focus his attention on stores in gold rush towns. He studies whole industries, collecting data on the structure, conduct, and performance of the industry. He will try to answer questions about competition within that industry and how this competition affects the public interest.

Working on this scale, list any important industries that apparently have local monopolies.

____

____

____

FRAME 38 - (continued)

There are many such "local monopolies," and many are protected by law.

For example, local authorities often license a monopoly in bus or train transportation, usually because competition would result in higher prices and worse service for the consumer, along with lower wages for the workers in the industry. (In fact, even without competition, local transportation often has to be subsidized.)

Utility companies are often granted local monopolies for much the same reasons. (Imagine how the poles would sprout if there were six power companies competing to supply electricity to every home!) In return for the monopoly, government keeps strong control on rates.

FRAME 39

In addition to the foregoing, there is another kind of local monopoly, or, more accurately, a tendency towards monopoly, that is based on the geographic location of resources.

The cement industry is an example of this kind of concentration. Cement can be made in most parts of the country, and the weight of the finished product makes it uneconomic to transport it any great distance.

Suppose we look at the cement industry from the local standpoint. Usually, there is one big plant serving the needs of an area. We have the characteristics of monopoly.

Imagine that the local cement making company puts up its prices to the point where it becomes possible to ship in cement from another area and still make a profit. List the characteristics of the market that are affected by this changed situation.

FRAME 39 - (continued)

If the price of locally-made cement rises to the point where it is feasible to ship in cement from another area, the characteristics of the market are changed as follows:

Concentration is affected. Where concentration was formerly complete, there are now two sellers in the market.

Barriers to Entry are not the same. An outsider has been able to slip in under the new price. Perhaps others can also do it.

FRAME 40

If we consider the cement industry as organized into a group of regional markets, what characteristics would each of these regional markets tend to have?

(a) Concentration: none/ low/ high/ complete

(b) Barriers to Entry: none/ low/ high/ complete

(c) Product Differentiation: none/ some

If we consider the cement industry nationwide as including many regional markets, the characteristics of each regional market are:

(a) Concentration: high

(b) Barriers to Entry: high

(c) Product Differentiation: none

FRAME 41

These foregoing characteristics describe which market type?

_____(a) Monopolistic competition

_____(b) Oligopoly # 1

_____(c) Oligopoly # 2

FRAME 41 - (continued)

(b) Oligopoly #1

REVIEW

FRAME 42

Look at Table #2 (p. 96). What type of market structure does the cigarette industry represent?

____

Oligopoly #2

The cigarette industry is a highly concentrated market, dominated by the "Big Three" of the business. The cost of entering such a business is high and its marketing problems are extensive. Product differentiation is present; differences between one brand of filter-tipped or mentholated cigarette and another are probably small, but through advertising, packaging and use of brand names manufacturers have built brand loyalty in the minds of consumers. (Notice how much cigarette advertising is aimed at "switching" such loyalties.) Product differentiation depends more on what consumers think about the product, rather than on actual physical differences in the good or services. If consumers think there is a difference and buy brand X for that reason, there is product differentiation.

FRAME 43

Please look at Table # 3 (page 97).

In your opinion, what might we say about Product Differentiation in respect to the bituminous coal industry?

There is some/none.
(pick one)

some

FRAME 44

Now, what do you think about Concentration for that industry?

It is relatively high/low.
(pick one)

Relatively low, with up to 9,000 mines. But 68 percent of 1956 production came from less than 2 percent of mines. The top ten mines have been gaining more of the business

FRAME 45

And, how about Barriers to Entry? Just use your judgment here and see if we agree.

____

Money is a barrier to entry. A deep mine costs millions of dollars. That makes it hard for most individuals to break in, but a company with a need for coal or coal products might regard this as a relatively small sum. Compared to some businesses, the cost is not high.

FRAME 46

This one is tricky, so be careful. Under what market type would you classify the bituminous coal industry?

____

Monopolistic Competition. As business investments go, investment in coal mining is "small potatoes." Economists classify the industry as Monopolistic competition, though there's room for argument. (There are elements of Oligopoly present which make the decision difficult.)

FRAME 47

You have just learned the five major types of markets as they will be discussed in this course.

They are:

(a) ______________________________

(b) ______________________________

(c) ______________________________

(d) ______________________________

(e) ______________________________

(a) perfect competition
(b) monopolistic competition
(c) oligopoly, type 1
(d) oligopoly, type 2
(e) perfect monopoly

FRAME 48

Market structure means the competitive characteristics of the market and so far we have discussed three market structure characteristics.

They are:

(a) ______________________________

(b) ______________________________

(c) ______________________________

(a) concentration
(b) barriers to entry
(c) product differentiation

In the next section we will discuss the reasons for classifying real markets into these five model market types.

If you want to quit or take a break, this is
a convenient place to do it.

Program # 12

Section 2

MARKET POWER

FRAME 1

Why are we so concerned about classifying real markets according to different types of market structure?

A major reason is that by analyzing these characteristics of demand and supply the economist can explain and predict how firms compete with each other in a particular market.

In competing with each other, firms make business decisions about three kinds of things:

1. Price and quantity to sell of product (usually referred to as price competition, since price and quantity are closely related.)
2. Quality or product competition.
3. Ways to reduce competition.

The last category includes decisions about whether to buy or be bought out by a competitor, gain control of vital resources, or seek some sort of government intervention such as patent protection, subsidies, or tax breaks.

These are the decisions we examine when we study market conduct--the way firms in a market compete with each other.

Generally speaking, the more closely the market resembles perfect monopoly, the greater the seller's market power.

In a perfect monopoly, the three market characteristics (Concentration, Barriers to Entry, and Product Differentiation) are present in full strength. The seller is, by definition, the sole source of a unique product which no one else may make. Provided he knows the demand curve for his product, he can adjust his production, quality, and price to maximize his profits without worrying how someone else is going to react. He has great market power.

In perfect competition, on the other hand, the characteristics are each zero. By definition, the seller is operating in a market containing many sellers, free entry, and a standard product. The supply and demand conditions of the market set his prices and the producer adjusts to this price by producing that level of output which gives him the best profit.

He has little control over quality because his survival depends upon keeping up with the improvements that everyone else in his market makes.

In perfect competition, the seller has great/zero market power.
(pick one)

In perfect competition, the seller has ZERO market power.

FRAME 2

The seller operating in a market that resembles perfect competition can gain market power only by changing the characteristics of the market. This means that he must innovate--he must improve his methods so that he can operate more cheaply, or he must offer a product that is in some way superior to that of his competitors (this may be a real superiority or it may be simply a product differentiation based on something less concrete, such as brand name loyalty). But basically, he must try to obtain a larger share of the market.

In other words, to gain market power the seller must move in the direction of monopoly.

Select the word which makes the following statement an accurate summary of what has just been said;

The more closely the market resembles a perfect monopoly, the (greater/smaller) the seller's market power.

The more closely the market resembles a perfect monopoly, the GREATER the seller's market power.

FRAME 3

Table I, which you have drawn up on page 62 , shows Oligopoly #2 next to Perfect Monopoly.

Which would you expect to have more market power?

(a) Oligopoly #1

(b) Oligopoly #2

FRAME 3 - (continued)

(b) Oligopoly #2

FRAME 4

Oligopoly #2 more closely resembles a perfect monopoly than does #1. And the more closely a market resembles perfect monopoly, the more market power it has.

In which characteristic does Oligopoly #1 differ from Oligopoly #2?

____

Product Differentiation.

Oligopoly #1 does not have product differentiation, while Oligopoly #2 does have product differentiation.

FRAME 5

Which of the following are examples of ways in which products might be differentiated?

_____(a) Smell

_____(b) Color

_____(c) Brand name

_____(d) Design

All are ways in which products might be differentiated (that is, ways in which a product might differ from a similar product.)

For example, a brand of soap might be essentially the same as another brand except for a slight difference in perfume; one manufacturer might put out a two-tone toothbrush to compete with others that have only one color; advertisers may drum their brand name into your ears in hopes that you will see only that name when you next reach for a box of cereal or a candy bar; the container for a hair spray might be designed as a dressing-table ornament.

FRAME 6

Some of the forms of product differentiation we have suggested may strike you as being essentially trivial. Others may seem to be good, solid advantages.

The point is that the seller in this kind of market wants to create and to take advantage of product differentiation. And the firm wants this differentiation to be in the mind of the buyer. There does not have to be a great differentiation--just enough to tip the scale when people are making the decision to buy.

Each difference gives the firm a little more market power--something to sing about in its jingles, something which the seller can use to commend the product to you.

Place a checkmark against whichever of these statements is true of Oligopoly #1.

_____(a) The producer has restricted market power. The firm's independence in market decisions is limited since it is hard to make the product different from competitors' products.

_____(b) The producer has a lot of market power because the firm can create consumer loyalty through its own policies relating to the quality of its own product.

(a) is correct.

In Oligopoly #1 there is no product differentiation. In the next lesson you will see more clearly why a seller in an Oligopoly #1 market has less market power than one in an Oligopoly #2 market.

Note:

It's an interesting point that the product differentiation which gets such emphasis in Oligopoly #2 markets is often not much more than a state of mind. For example, consumers can develop a great loyalty to a brand name, to the point where they will not experiment with other brands and will not buy if their favortie brand is not available.

FRAME 7

The market power of a producer depends largely upon the market structure characteristics already listed (Concentration, Barriers to Entry, and Product Differentiation). The more complete these characteristics are, the more market power the producer has. And the more market power he has, the more control he has over the three kinds of competitive conduct mentioned at the beginning of this section:

1. Price competition;
2. Product competition;
3. Ways of reducing competion.

Of these three types of competitve decision, which, if any, can be controlled by the supplier in a perfect monopoly?

____

____

All three are controlled by the supplier in a perfect monopoly market. Market power is control over conduct. The firm can set price, set quality standards of the product and can bar entry by other firms.

FRAME 8

The supplier has greatest control over the decisions made in conducting business when the concentration, barriers to entry, and product differentiation in his market are ________________________.

complete.

(These are the characteristics of a perfect monopoly market.)

FRAME 9

The market structure characteristics (Concentration, etc.) determine the kind of competition existing in a given market.

For instance, what market structure characteristic makes possible product competition?

____

Product Differentiation

FRAME 10

To help you see the relationship between the characteristics of market structure (Concentration, etc.) and the supplier's control over decisions about competition, consider a wheat farmer.

(a) As far as product differentiation is concerned there is some/none.
(pick one)

(b) Although he operates under conditions of perfect competition, with respect to this characteristic his market is like Oligopoly #1/#2.
(pick one)

(c) Therefore he would/would not find it to his advantage to advertise or to use a brand name.

(a) none
(b) Oligopoly #1
(c) would not

FRAME 11

Is there much opportunity to engage in product competition in:

(a) Perfectly competitive market? Yes/No (pick one)

(b) Oligopoly #1 market? Yes/No (pick one)

(a) No; (b) No.

There is no product differentiation in a perfectly competitive market, nor is there any in an oligopoly #1 market. In other words, how much good would it do a brick manufacturer to worry about packaging?

FRAME 12

What kind of competition does the presence of product differentiation make possible--and necessary?

____

product competition

TWO MORE MARKET STRUCTURE CHARACTERISTICS

FRAME 13

Other market structure characteristics are used in economic analysis of market competitive conduct. Here, we will consider two:

(1) Growth rate of market demand

(2) Demand elasticity

(FRAME 13 continued on next page)

FRAME 13 - (continued)

Business management must also take knowledge of these two characteristics into consideration in making decisions. It is natural, then, that this knowledge helps us to predict the decisions that are made in a given market. Both characteristics affect all market types in the same way.

Growth rate of market demand describes the rate at which demand for a product changes over time.

> Suppose, for example, that overa period, for a new electronic industry, demand grows faster than it does in other industries and faster than supply of the output. How might this affect the pricing decisions of a producer in the industry where demand is growing faster?
>
> _____(a) The firm will lower the price.
>
> _____(b) The firm will fight to hold the price steady.
>
> _____(c) The firm will raise the price.

(c) If demand growth is relatively high and outstrips production, buyers will compete for the available supply. The tendency is higher prices.

FRAME 14

On the other hand, and perhaps more important in a growing industry, firms may be growing at the expense of other industries by getting business away from other industries by undercutting the substitute product.

> Manufacturers of synthetic fabrics are trying to get people to buy rayon or banlon. Assuming the firms have control over price, what pricing policy would they follow to increase demand for their product?
>
> ____
>
> ____

FRAME 14 - (continued)

lower prices enough to make rayon a cheap substitute for cotton

FRAME 15

Business managers continually walk the tightrope of supply and demand conditions. To do so successfully, they must use knowledge of the characteristics of the market to help them make decisions.

The second additional characteristic we have mentioned helps business management in firms in imperfectly competitive markets decide the safe limits of any price change. You should find it a familiar characteristic. Demand elasticity, as you saw earlier, describes how responsive buyers are to changes in price.

In a perfect competition market, if one of the competitors tried to raise his price, he would find that demand is what? (If you need a review, return to program #11 on Elasticity of Market Demand.)

_____(a) completely elastic

_____(b) very inelastic

(a) completely elastic.

Demand is elastic if there is easy substitution for a product (remember?). In perfect competition, many sellers offer identical products. If one seller boosts his prices but nobody else in his market does, people will buy from someone else and he will not be able to sell anything.

FRAME 16

Diagram I below shows market demand and supply for a product sold in a perfectly competitive market. In Diagram 2, draw the demand curve for one seller in this market.

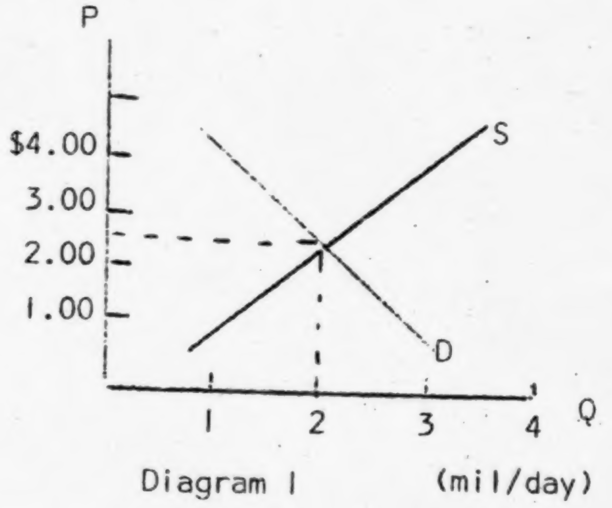


Diagram I

Market Demand and Supply

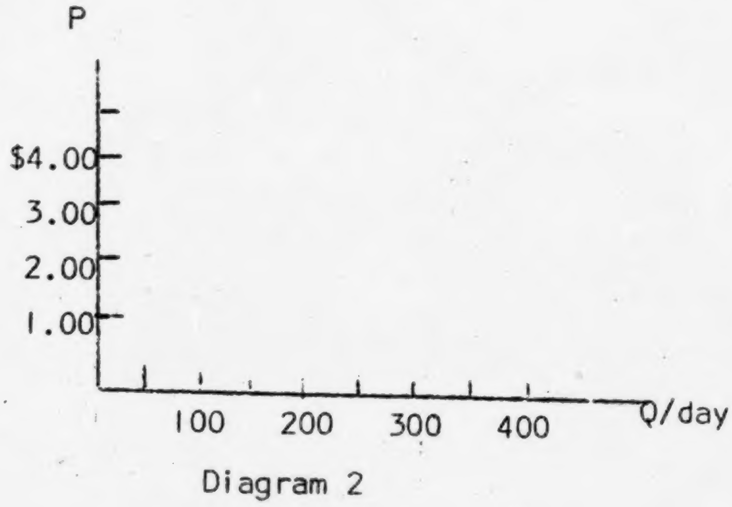
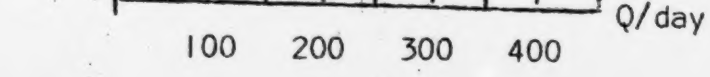


Diagram 2

Demand for One Seller in a Perfectly Competitive Market



Demand curve for one seller in a perfectly competitive market. The firm can only sell at $2.50. If it increases the price even 1¢, quantity bought would drop to zero.

FRAME 17

How would you describe this seller's demand curve?

_____(a) completely elastic

_____(b) elastic

_____(c) inelastic

_____(d) completely inelastic

(a) Completely elastic

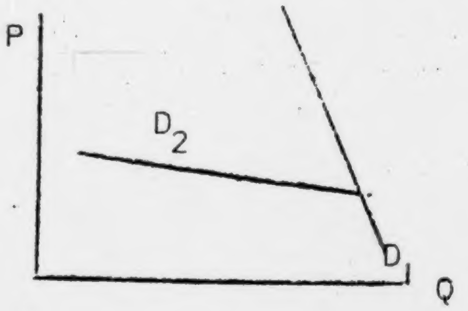
FRAME 18

To gain more market power, firms try to reduce/increase (pick one) the elasticity of demand for their product.

reduce

FRAME 19

Which way will this seller's demand change if the firm gains more market power?



It changes from:

_____(a) D_1 to D_2

_____(b) D_2 to D_1

FRAME 19 - (continued)

(b) from D_2 to D_1 because Demand becomes less elastic.

FRAME 20

To summarize the strategy of competitive conduct in an imperfectly competitive market:

The object of much product competition, and attempts to reduce competition, boils down to a firm's desire to alter the demand for the firm's output, to create a demand curve that is less elastic/more elastic.
(pick one)

This shift in demand will, hopefully, increase/decrease quantity sold and
(pick one)
also give the firm some ability to set price.

less elastic
increase

FRAME 21

Finally remember that for the industry as a whole--that is, all the firms--market control is limited by the demand elasticity for the product, and by the differences in elasticity for different customers.

a. If an imperfectly competitive industry produces a product which competes with many products from other markets, will firms in this industry be able to change price much?

_____Yes

_____No

Reason____

____

(FRAME 21 continued on next page)

FRAME 21-(continued)

b. If within one industry, one group of customers needs the product more than another group and if producers could charge different prices to the two groups for which group might suppliers raise the price?

_____the group which needs the product

_____the group which does not need the product

a. no. A small price change brings about a very large % change in quantity sold.

b. the group which needs the product

TABLE 2

MARKET STRUCTURE OF THE CIGARETTE INDUSTRIES

Market Concentration	Barriers to Entry	Product Differentiation	Miscellaneous
In 1959, the "big three" companies market share was 68.8%. Reynolds was largest with 30.2%, American 2nd with 26.6%, Liggett and Myers with 12.5%, Phillip Morris with 9.2%, Lorillard with 11.7%. Brown & Williamson with 9.8%. The largest 6 firms control almost 100% of the market.	1. High advertising costs equal to 10% of price. 2. Expensive field sales activities to provide for distribution of cigarettes to retailers. 3. Machinery and equipment readily adaptable to quite small or very large factories. Output of an individual machine is small with respect to that of the whole firm. One machine can produce 750-1600 cigarettes/minute. American Tobacco had 600 machines in 1942.	Leading brands in any one type of cigarette are physically almost identical, yet have slight differences in leaf blend and flavoring treatment. Customers show preferences for individual brands.	1. Low elasticity of demand for cigarettes in general, high elasticity for any one brand. 2. Long-run growth: cancer scare produced temporary decline in cigarette consumption.

TABLE 3. MARKET STRUCTURE OF THE BITUMINOUS COAL INDUSTRY

Market Concentration	Barriers to Entry	Product Differentiation	Miscellaneous
1. # mines is large, between 6000-9000, depending on the year. 2. In 1956 the 107 largest coal firms produced 68% of all coal mined, with the largest producing 8%. 3. Most coal is produced in a relatively small area. 4. Ten largest firms increase their share from 16-26% between 1946 and 1956.	1. "Deep mines require upwards an investment [illegible] class I mine. 2. Between 1940 and 1957 # of mines in operation varied between 6000 and 9000. 3. Railroads have encouraged new mine areas by charging lower rates per ton mile. 4. Freight charges added an average of 72% to the cost of coal, F.O.B. the mine in 1956.	1. Different consumers require coal of different sized pieces, coal with different physical properties--degree of volatibilities, ash, sulpher content.	1. Geological and physical conditions of a mine largely determine the cost of production. 2. Cost does not determine quality of the product; quality depends on the deposits. 3. Substantial cyclical and seasonal changes in demand. 4. Competitive cost position of a mine also depends on how close it is to important markets for coal. 5. Coal's share in the total fuel market has been reduced to 1/4 of the total, compared to 2/3 in 1920. 6. There are new uses for coal to produce other products. 7. Inelastic, short-run demand.

TABLE 4 MARKET STRUCTURE FOR THE STEEL INDUSTRY

MARKET CONCENTRATION	BARRIERS TO ENTRY	PRODUCT DIFFERENTIATION	MISCELLANEOUS
Industry divided into four stages of production: In 1959, the top 12 steel companies controlled 85% of iron ore reserves, 86% of pig iron production, 83% steel ingot production, 80% finish hot-rolled production. U.S. Steel, the largest firm, controlled from 27 to 33% of the market in each category. Furthermore, since different companies specialize in different regional market areas, concentration is higher than the figures above indicate.	1. The nine largest steel producers and the four largest iron ore merchants control 95% of the reserve in the Lake Superior district which produces 85% of our iron ore requirements. Major producers also control foreign iron ore reserves. 2. Integration of production--tendency for one firm to produce at each stage of production--has increased since 1939, reducing the number of independent steel companies producing at only one stage of production. 3. Transportation costs are high. 4. There are economies to be obtained from integrating some stages of production. 5. "Optimal" size capacity = 2.5 mil. ingot ton/year.	1. At early stages of production--iron ore mining, pig iron production, steel ingot production, finished hot-rolled production are produced to standard specification. 2. Fabricated steel products are differentiated. 3. Brand names and trade marks are unimportant.	1. Steel producers say that the demand for steel is very inelastic because: a) it is a raw material with a derived demand; its demand depends upon the demand for autos, etc. b) substitution is unimportant in the shortrun; c) steel represents a small % of total cost of the things made out of steel.

QUIZ ON MARKET STRUCTURE After you have completed the Program, check your understanding of the material by completing the following:

---

1. Name the five types of market discussed in the lesson.

2. Name the three major characteristics by which market types are classified.

3. A market has many sellers. It can be entered by anyone with a small amount of capital. The products offered are similar but differ in color, size, and quality. What type of market is this?

4. The products in a given market are mass-produced by a relatively small number of companies using expensive machinerey and a large labor force. The product of each company is identical to all others. What type of market is this?

5. In what kind of market do the following operate?

   (a) hamburger stand.

   (b) automobile manufacturer.

   (c) Truck farmers (farmers who grow vegetables for the fresh produce market.)

6. Of the three "industries" named above, is one closer to being an example of perfect monopoly than the others? If so, which is it.

7. Is one closer to being an example of perfect competition than the others? If so, which is it?

8. Look at Table 4 (steel industry) What are the characteristics of this industry? What type of market does it represent?

(QUIZ - continued)

9. Which would have the greater market power:

    (a) an example of perfect competition,

    (b) a department store, or

    (c) an example of perfect monopoly?

10. Which of the following probably has the highest elasticity of demand. (REVIEW QUESTION)

11 (a) a sack of potatoes.

    (b) a fur coat.

    (c) a house.

    (d) a ballpoint pen.

11. Check which, if any, of the following statements are true.

_____(a) If a product has an inelastic price, quantity sold is not very responsive to changes in price.

_____(b) High elasticity means that even when the price changes, the demand for the product does not change drastically.

_____(c) Any luxury item has elastic demand.

_____(d) Very low-priced items tend to have an inelastic demand.

12. Check which, if any, of the following statements are true.

_____(a) When the growth rate of demand increases, concentration tends to decrease.

_____(b) In monopolistic competition, an increase in the growth rate of demand tends to increase the barriers to entry.

_____(c) An increase in the growth rate of demand tends to bring about a decrease in price.

ANSWERS TO QUIZ

ON MARKET STRUCTURE

1. Perfect competition, Monopolistic competition, Oligopoly type I, Oligopoly type 2, perfect monopoly.

2. Concentration, Barriers to entry, Production differentiation.

3. Monopolistic competition.

4. Oligopoly type I.

5. (a) Monopolistic competition.

   (b) Oligopoly #2

   (c) Perfect competition.

6. Automobile manufacturers.

7. Truck farmers.

8. Very large producers, High barriers to entry, Standard production for primarily metal products, Oligopoly #I.

9. (c)

10. (b)

11. (a), (d).

12. (a)

Unit II
Exercise 10

Lesson 8

Industry Case Studies

Structure, Conduct and Performance
of Three Industries

The purpose of this group of problems is to allow you to study the differences in market competition in three important U.S. Industries: Aluminum manufacture, Automobile manufacture and sales; and Telephone manufacture and services. Even though there is a high degree of market concentration in each industry, the industries are very different from each other. By studying each industry and comparing them, you will be able to summarize the similarities and differences. In this way you should be able to reach some tentative conclusions about the actual performance of oligopoly and monopoly markets.

The clue of studying and comparing different industries is to remember that competitive conduct of firms in a market and the long-run performance of the industry in allocating resources depends on the market structure- the degree of market concentration, the kinds of barriers of entry, the possibilities for product differentiation, the growth rate of demand and the degree of price elasticity of demand.

Included here are summary tables to permit you to identify the important facts about market structure for each industry. Read the essay on the industry structure in the readings and summarize the main points in the table provided for that industry. Each of the three industries is composed of several related markets, one for each stage of production. Because market conditions are often different at different stages of production, you are asked to summarize the characteristics for each stage.

In the remaining part of the case study you can use this summary of industry structure to try to predict how firms compete with each other amd the long-run effect of this competition on resource allocation. A good way to make these predictions about market conduct is to put yourself in the place of top managment of one of the firms. Then, try to answer the questions below by figuring out what you would do if you were trying to make the best decisions for your corporation.

MARKET COMPETITION

A. Price Competition

1. How are prices determined in the industry, by the interaction of supply and demand as in the predict competition model? If not, who sets the prices and how do they decide what price to set?

2. Do all firms charge the same price for the same product? If so, why? If not, why not?

3. Do prices of the products change very often in response ot changes in demand or supply conditions?

4. Generally speaking, compared to predict competition, is there much price competition between firms?

5. Do firms practice price discrimination (charging different prices for the product to different buyers)? Who do they discriminate against?

B. Product Competition

1. What forms of product competition do the firms use?

2. How effective are they?

3. Why do they use product competition?

4. What effect does product competition have on market structure characteristics?

C. Tactics to Control or Eliminate Competition

1. Do firms try to eliminate competition? If so, how?

MARKET PERFORMANCE (the text readings include summary charts and diagrams on industry performance which should help you answer the following questions)

A. Do firms in the industry tend to provide output at the lowest possible price? What data would you have to look at to find this out?

B. Are resources reallocated in accordance with changes in consumer demand and in technological breakthroughs? What data you use to find this out?

C. Is the industry progressive? What data would you use to find this out?

D. Summarize the most important conclusions about industry performance.

Table 1
Summary Table of Market Structure of Aluminum Industry

Stages of Production	Concentration	Barriers to Entry	Product Differentiation	Market Demand: Elasticity & Growth
Primary Aluminum Products Mining				
Refining Alumina				
Reduction Primary Aluminum				
Fabricated Aluminum Fabrication				
Aluminum Products				

Table 2
Summary Table of Market Structure of the Automobile Industry

Stages of Production	Concentration	Barriers to Entry	Product Differentiation	Market Demand: Elasticity & Growth
Manufacture				
Retail Sales				

Table 3
Summary Table of Market Structure of the Telephone Industry

Stages of Production	Concentration	Barriers to Entry	Product Differentiation	Market Demand: Elasticity & Growth
Manufacture of Telephones and other equipment				
Service				

Unit II
Exercise 11

Lesson 9

Analyzing Statistical Tables

The table below presents data on income distribution. Study the table carefully and then answer the questions which follow the table.

Table 1

The Functional Distribution of National Income
(Estimated as Averages for ten-year periods)
1900-1957

(all figures reported as percentages of national income)

Time Period	National Income	Employee Compensation	Proprietor's Income*	Total Property Income	Kinds of Property Income		
					Corporate Profits	Interest Payments	Rent Income
1900-1909	100%	55%	24%	21%	7%	6%	9%
1905-1914	100	55	23	22	7	6	9
1910-1919	100	53	24	23	10	5	8
1915-1924	100	57	21	22	9	5	8
1920-1929	100	61	18	22	8	6	8
1925-1934	100	63	16	21	6	8	7
1929-1938	100	67	16	18	4	9	5
1934-1943	100	65	17	18	9	6	3
1939-1948	100	65	17	18	12	3	3
1944-1953	100	66	16	18	13	2	3
1949-1957	100	67	14	19	13	3	3

* Income received by the owners of unincorporated businesses.

1. What was the percentage change in the share of National Income earned as Corporate Profits between the following periods? (show your calculations)

   a. from 1900-1909 to 1929-1938?

   b. from 1900-1909 to 1949-1957?

   c. from 1900-1938

   d. from 1900-1957

   e. Which change seems to represent the trend (the general change through time) and how can you tell?

f. What explains these changes in the share of National Income going to Corporate Profits between the beginning and end of these two periods?

2. Which main category (employee comensation, proprietor's income, and property income) had the greatest percentage increase firm 1910 to 1939?

   Which had the greatest percentage decrease in that same time period?

   What explanations can you think of for these changes?

3. Describe the main characteristics of the distribution of income which are shown by this table.

Unit II
Exercise 12

Lesson 9

Personal Distribution of Income

Income distribution can also be described in terms of the personal Distribution of Income, that is , how income is divided up among the persons in the economy. To describe how income is distributed among the people, all families and individuals living alone are divided into groups according to the amount of their annual lncome.

Tables 1 and 2 divide all families into five groups, each group containing one-fifth of the total number of families. The groups are ranked according to levels of income earned, from the lowest fifth to the highest fifth of family incomes.

Tables 2 and 4 divide all families into five income classes depending on the family income for 1964:

1. Up to $3,000
2. $3,000 to $5,000
3. $5,000 to $7,000
4. $7,000 to $10,000
5. $10,000 to over

In the following four tables certain characteristics of the families and the heads of the families in each of these income classes is set forth. Study these tables carefully and then write two short essays about what kind of families would most likely be in 1) the class making up to $3,000, and 2) the class making $10,000 and over.

Table 1
Sources of Family Incomes by Percentages, 1964

Income Class	Employee Income	Proprietor's Income	Property Income	Transfer Income	Total
lowest 1/5	37	6	5	52	100
second "	66	10	6	18	100
third "	83	8	3	5	100
fourth "	86	8	4	2	100
highest "	75	14	9	2	100

Table 2
Distribution of Income by Major Source Between Family Income Classes

Total Family Income Quintiles	Employee Income	Proprietor's Income	Income Property	Transfer Payments
Lowest 1/5	2%	3%	3%	21%
second "	10	9	9	27
third "	16	13	8	13
fourth "	26	17	12	9
fifth "	46	58	68	20
Total	100%	100%	100%	100%

Table 3
Distribution of Family Income by Different Characteristics of the Head of the Family, 1964-1965

%of Families in income class

Characteristics of Family Head	up to $3,000	$3,000 to $5,000	5,000 to $7,000	$7,000 to 10,000	$10,000 and over	Total
Age of Head						
14-24	21	23	28	21	7	100
25-34	12	15	23	32	18	100
35-44	9	13	19	28	31	100
45-54	10	11	16	25	36	100
55-64	17	16	18	21	28	100
65 and over	42	24	13	11	10	100
Years of School Completed						
Less than 8	42	22	16	12	8	100
8 years	26	22	20	20	12	100
1-3 High sc.	17	20	22	22	19	100
4 years HS	9	16	23	29	23	100
1-3 years college	8	11	19	30	32	100
4 of more college	4	5	13	24	54	100
Sex of Head						
Male	34	19	21	16	10	100
Female	72	18	7	2	1	100
Color						
White	14	15	19	25	27	100
Non-White	36	25	15	14	10	100

Table 4
Distribution of Family Income by Region in
Which Family Lives, 1964

Region	Percent of Families in Income Class					
	UP to $3,000	$3,000 to $5,000	$5,000 to $7,000	$7,000 to $10,000	$10,000 and over	Total
Northeast	12	15	21	25	27	100
North Central	16	16	20	25	23	100
West	14	15	18	25	28	100
South	26	21	19	18	16	100

Class up to $3,000

Class $10,000 and over

Unit II
Exercise 13

Lesson 9

The Equality of Income Distribution
Families or Individuals Living Alone

The following table shows the percentage of income received by each fifth of the consumer units in the U.S. for 1964.

Table 8
Distribution of Personal Income Received by Each Fifth of Consumer Units

Income Group in the Population	Percent of Income Received
Lowest 20% of income earners	5%
Second "	12
Third "	18
Fourth "	24
Fifth "	41
	100

1. Using the grid below, draw a curve which shows the data in Table 8.

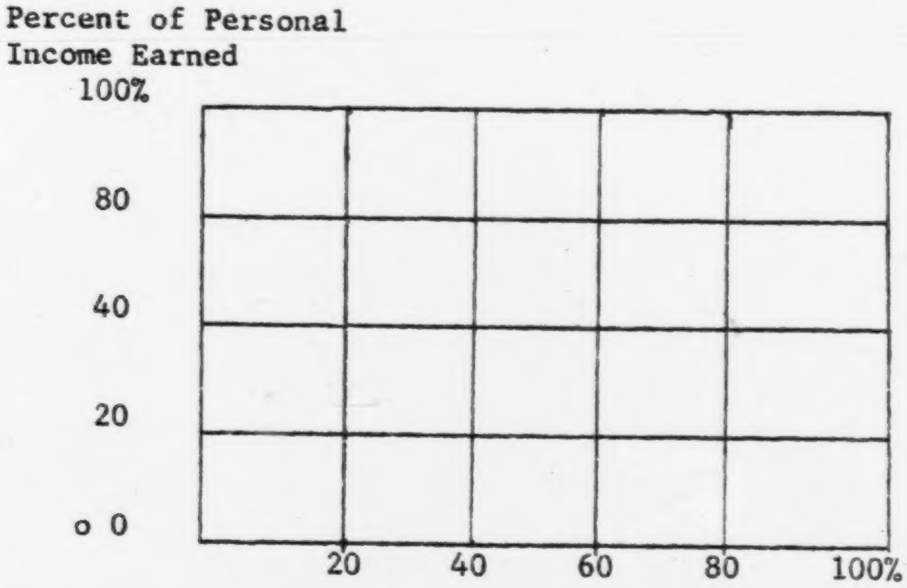


Diagram 1: Distribution of Personal Income Among the Families in the U.S. in 1964

2. What does this graph tell you about the inequality of income distribution in the United States?

3. Draw a line on the graph which describes complete income equality.

4. Draw and label another line in the graph which describes greater inequality of income distribution than that which already exists in the United States.